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Military Planning Division
Research and Development Branch

TEXTILE SERIES - REPORT NO. 17

TENT RESEARCH REPORT NO. 3

SOLAR RADIATION ON EXPOSED ARMY TENTS AND CANVAS

at

CAMP LEE, VIRGINIA

by

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Washington, D.C.

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FOREWORD

As was stated in the Foreword to the previous report in this series (Tent Research - Report No. 2), "The effects of weather predominate over all other causes in the failure of tentage material. ** - it is presumed that photo-chemical degradation, induced by certain portions of the solar spectrum, is the prime cause-".

Many weathering studies on tentage materials have been made in the past, but with no data obtained on the solar factors except perhaps total sun-time during the period of exposure. One of the principle observations of these tests was the difference of relative performance within any given series when exposed in different localities. Temperature, humidity, and precipitation measurements were made in the most recent of these tests but a critical analysis of causal factors and determination of their relation could not be made with any certainty because of the unknown radiation factors.

The tent exposure test at the Quartermaster Board, Camp Lee, Virginia was initiated in part to analyze destructive elements of the weather in direct relation to the degradation incurred by the many samples. There being little precedent for measurements of radiation in this field of research, the program is largely one of exploration to establish techniques and significant types of measurement. A secondary objective was the analysis of the factors encountered in the tests, which could be presumed to be representative of a fairly large continental area.

The Smithsonian Institution was called upon to advise on the planning and subsequently to supervise the conduct of the solar radiation measurements, including the preparation of necessary equipment. Mr. Aldrich was primarily responsible for both the planning and the operations.

It is planned to follow through, once this basis for determination has been established, with similar measurements at other locations within the United States and in other areas of significance where conditions are not duplicated in this country. From such continuing survey work it is believed will be derived for the first time a real understanding of weather as it effects service materiel, and protective measures will be developed accordingly.

While the present work is related solely to tentage problems, it is believed that the techniques described, and some of the data, will be of real interest to research workers in such fields as Agriculture, Meteorology, Medicine, Communications, etc.

S. J. KENNEDY
Lt. Colonel, QMC

June 1946

SECTION I

TECHNIQUES OF MEASUREMENT OF SUN AND SKY RADIATION, CAMP LEE, VIRGINIA

A. Statement of Problem

The Army tent represents what is probably the most extensive exposure of cellulose textiles to atmosphere that is to be found anywhere. During the war a very large proportion of troops under arms was at one time or another housed in tents. The use of cotton textiles created a great many problems for the Army which had a far-reaching impact because of the very large quantities of canvas both in initial use and for replacement.

The problem of replacement of tentage became acute in 1944 due to rapid deterioration of tents especially in the tropics. Part of this was of course due to such factors as attacks by micro-organisms. It was apparent that the destructive action of solar radiation on cellulose was also a contributing factor of great importance. While various exposure tests had been made by the Quartermaster Corps to determine the effects of general exposure upon Army tent duck, no comprehensive study had been made of the nature of the effect of solar radiation upon such fabrics.

To provide fundamental information of the effect of solar and sky radiation upon textiles, the Smithsonian Institution was asked to undertake the measurement of such radiation as an aid to the extensive exposure test which was started in the spring of 1945 at the Quartermaster Board at Camp Lee, Virginia. This paper outlines the techniques which have been installed for such measurement, and which combine a number of existing techniques with certain new ones developed specifically for this test. It is believed these techniques may have considerable interest to further research in this field.

B. Types of Data Recorded

Starting in July 1945, daily measurements have been made of total solar radiation and also of the radiation in three selected bands of the spectrum. Due to delays in obtaining some of the needed equipment it was not possible to obtain continuous series from the start. But as the test has progressed a continuous series has been instituted and checked. It provides the following data:

T.F.	Total radiation obtained on a flat surface.
T.45 E.	Total radiation obtained on a surface oriented at a 45° angle facing east.

I.R. 45 E. Radiation in the infrared region oriented to 45° angle facing east.

V.I.R. 45 E. Radiation in the visible and infrared oriented to 45° angle facing east.

From the above series it will be obvious that radiation of the following bands of the spectrum can be obtained by computation:

V. 45° E. Radiation in the visible part of the spectrum only (V.I.R. - I.R.)

U.V. 45° E. Radiation in the ultraviolet region only (T. -V.I.R.).

I.R. 45° E. Radiation in the infrared region only.

C. Description of the Instruments

For the most advantageous exposure of the measuring instruments it was recommended that a platform just outside the recording room be erected of sufficient height to give a clear exposure. Directly adjacent to the building selected, which had formerly been used as a mess hall, a platform 20 by 20 feet square and 25 feet above the ground was erected. It was built of sufficiently solid construction to eliminate harmful vibrations. All the recording instruments for solar and sky radiation were mounted on this platform. In addition, one end of the instrument building was equipped with a light-proof room, in the floor of which 3 cement piers were sunk in the solid ground to a depth of about 5 feet to form bases for the instruments described below.

The instruments used for the determination of solar and sky radiation are of three types: The Eppley pyrheliometer, a modification of the Rentschler ultraviolet meter, and a thermoelectric recording device.

1. The Eppley pyrheliometer is an instrument which is standard in this field as a measurement of solar radiation. It is adapted to measure radiation from a complete hemisphere of sky. Briefly, it consists of two concentric circular rings of equal area, one blackened and the other white coated. A series of thermoelements of gold-palladium and platinum-rhodium are attached to the under side of the rings, the hot junctions on the black ring and the cold junctions on the white. The rings are mounted horizontally in the center of a thin, spherical, glass bulb. This bulb is continuously exposed to the radiation to be measured. The electromotive force built up in the thermopile when the instrument is exposed to radiation can be measured at intervals or, preferably,

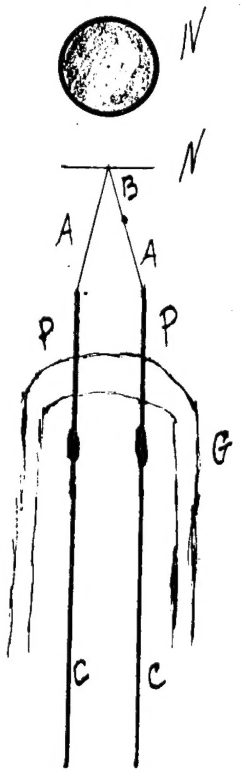


Fig. 1, Diagram of thermoelement device

N, nickel foil absorbing surface
A,B, thermoelement wires
P, platinum leads sealed in glass tube,G.
C, copper leads to galvanometer.

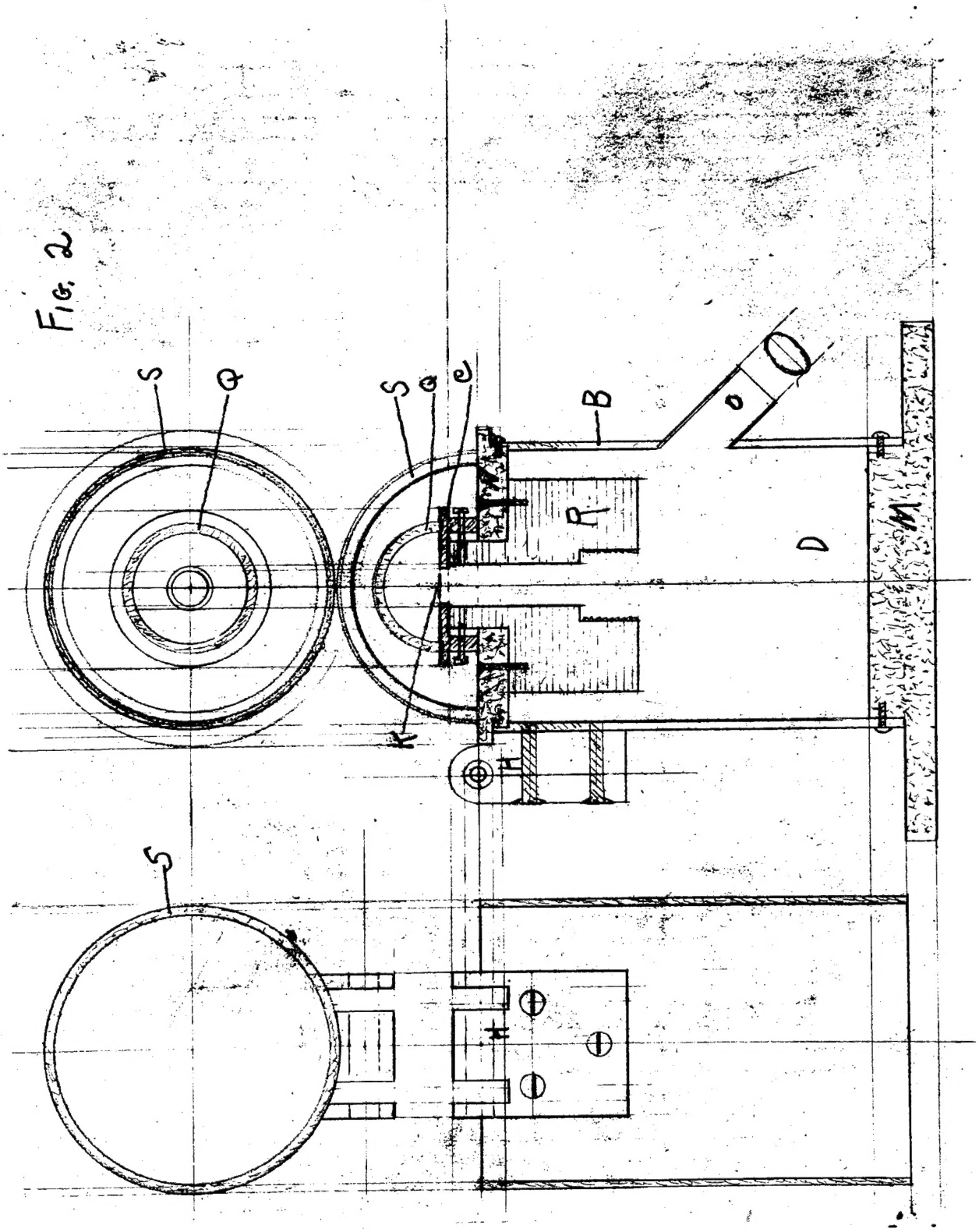
automatically recorded. In our case the pyrheliometer is hooked up with a Leeds & Northrup micromax recorder. This gives continuous automatic recordings of the total radiation received on the flat absorbing surface (TF) of the pyrheliometer.

2. The principle of the Rentschler ultraviolet meter is that a photoelectric cell, sensitive to ultraviolet light only, is made to record by a series of impulses the energy it receives. As modified for this work, the Rentschler meter consists essentially of a special phototube whose cathode is made of Misch metal, sensitive in the wave length range 2900 to 4500 Angstroms. This cathode has a flat absorbing surface protected by a quartz dome which exposes the cathode to a full hemisphere of sky. When ultraviolet radiation falls on the cathode, current proportional to the intensity of the radiation flows from the phototube, charging a condenser. When the voltage across the condenser reaches a certain value the condenser discharges. This discharge sets up a series of reactions ending in the momentary closing of a relay which operates a counter. Immediately after discharge, the condenser again begins to charge and the operation is repeated. Thus by reading the counter at stated intervals we have a series of values whose successive differences are numbers proportional to the total ultraviolet energy falling upon the instrument. The total quantity of ultraviolet radiation integrated over a whole day is obtained by reading the counter at the beginning and end of the day and taking the difference.

3. The third type of instrument, the Smithsonian instrument, was devised and built especially for this work. It consists of a single Clark thermoelement, especially mounted. This type of thermoelement is very sensitive, quick acting and rugged. The surface which absorbs the radiation is a circular disk of very thin nickel foil about 1/8 inch in diameter, blackened with benzol soot and platinum black. The thermoelement is welded to the center of the under side of the disk, as shown in Figure 1. The whole thermoelement assembly has a very small mass, and quickly assumes air temperature when not exposed.

Figure 2 is an actual size working drawing of the thermoelement housing. A brass tube (B) is fitted with a base (M) and a top (N), both of masonite. S is a double walled copper shutter, operating on the hinge (H) to open 180° and thus expose the absorbing disk (K) to the full sky hemisphere. A heavy brass piece (R) serves to hold in its center axis the glass tube thermoelement mounting at the top of which is the disk (K). A quartz (or other glass filter) hemisphere (Q) is sealed to the brass base C. Lead-covered copper leads from the galvanometer to the thermoelement

FIG. 2



enter at (O). In the space (D) drying agent is provided to prevent moisture on the inner surface of the glass dome. The metal exterior of the housing is painted white to minimize heating in sunlight.

Three different glass hemispheres are used. One, of pure fused quartz, transmits nearly completely all the radiation throughout the whole wave-length range of the spectrum. Another, a yellow glass (Corning #3385), transmits the visible and infrared but cuts off the ultraviolet. The third, a black glass (Corning #2540) transmits only the infrared.

D. Installation of Instruments

The above described three types of instruments are arranged as follows on the observing platform:

One Eppley pyrheliometer is mounted horizontally, and connected with the micromax recorder in the office below. The second Eppley is mounted at an angle of 45° facing south, and its galvanometer deflections are recorded on one of the drums which we made for use with the new Smithsonian instrument.

Seven Smithsonian instruments are installed on the platform. Three are mounted in a line at a 45° angle facing east, one having a quartz dome, one a yellow 3385 dome, and the third a black 2540 dome. At one end is mounted an electromagnet, with a shaft connecting it with the three shutters. When current enters the magnet the shutters open simultaneously. On breaking the circuit the shutters close by gravity. Three additional Smithsonian instruments are mounted similarly, one inside each of the three types of filter-boxes, described below. These are placed so that the absorbing disk in each case is at the same level as the exposed panel would be in the filter box, and centrally placed to receive radiation symetrically through the filter faces. Each of these instruments has a quartz dome, since it is desired to measure all the radiation that comes through the filters. The shutters are opened and closed by an electromagnet as before described. The seventh instrument also has a quartz dome, is mounted horizontally, to expose the whole sky, and in this way to give a record similar to the horizontal Eppley, and to serve as a comparison. A third electromagnet operates the shutter of this instrument.

The galvanometer leads from all the instruments mounted on the platform, and also the leads for the electromagnets are all brought down in lead covered cables to the recording room. On the center pier in this room are placed two rows of four recording drums. Each drum is accurately turned from brass tubing and is 5 inches in

diameter and 14 inches long. Enclosing each drum is an easily removed light-tight wooden box, along one side of which is an adjustable horizontal slit which permits the spot of light from the galvanometer to reach the photographic paper which covers the drum. The width of this slit is about .1 mm. The eight drums are uniformly driven by a single 1/75th horsepower synchronous motor, rotating at 1800 R.P.M. Through a speed reducer and gear arrangement the drums rotate once in 16 hours (2 mm. per 5 minutes on the photographic paper.)

On the two outer piers in the recording room are eight galvanometers, each one symmetrically facing the slit of one of the drums. The distance from galvanometer to drum is 2 meters in each case. The galvanometer system used is the Type L, Rubicon, in which the moving coil is supported between upper and lower gold suspensions, held taut by phosphor bronze springs at each end. The galvanometer mirrors are figured to give a sharp image of the source at 2 meters scale distance. Special boxes enclose the systems to protect from air disturbance, with a lever at the top for zero adjustment.

The source of each galvanometer spot light is a Mazda 25 watt tubular lamp having a single vertical spiral filament. A light-tight metal box encloses each lamp so that light from a small length of the filament is directed to the galvanometer mirror without leakage to the recording drum. Each lamp is mounted next to a drum on an adjustable stand to permit centering the light on the galvanometer mirror.

The measurements of total radiation and radiation in the various bands of the spectrum as described above are expected to give a picture of the total amount of radiation received by all the tents in the area. While this information can be expected to be of a great deal of value it was realized that some panels should be exposed which would show only the effects of the various selected bands of the spectrum. Arrangements were accordingly made to obtain filters from the Corning Glass Company which were to be placed directly over canvas and which would then exclude all undesired portions of the spectrum. Actually three types of such filters were used; I.R., a filter comparable to the black dome referred to above in which the same type of light is measured; V.I.R., a yellow filter similar to the yellow dome; and T.F., a vycor filter which like the quartz dome transmits all radiation.

The arrangement used for exposing canvas under filters is interesting in that it provides for free circulation of air around the canvas, and yet excludes all radiation except what is transmitted by the filter. These panels mounted under filters were placed at a 45°

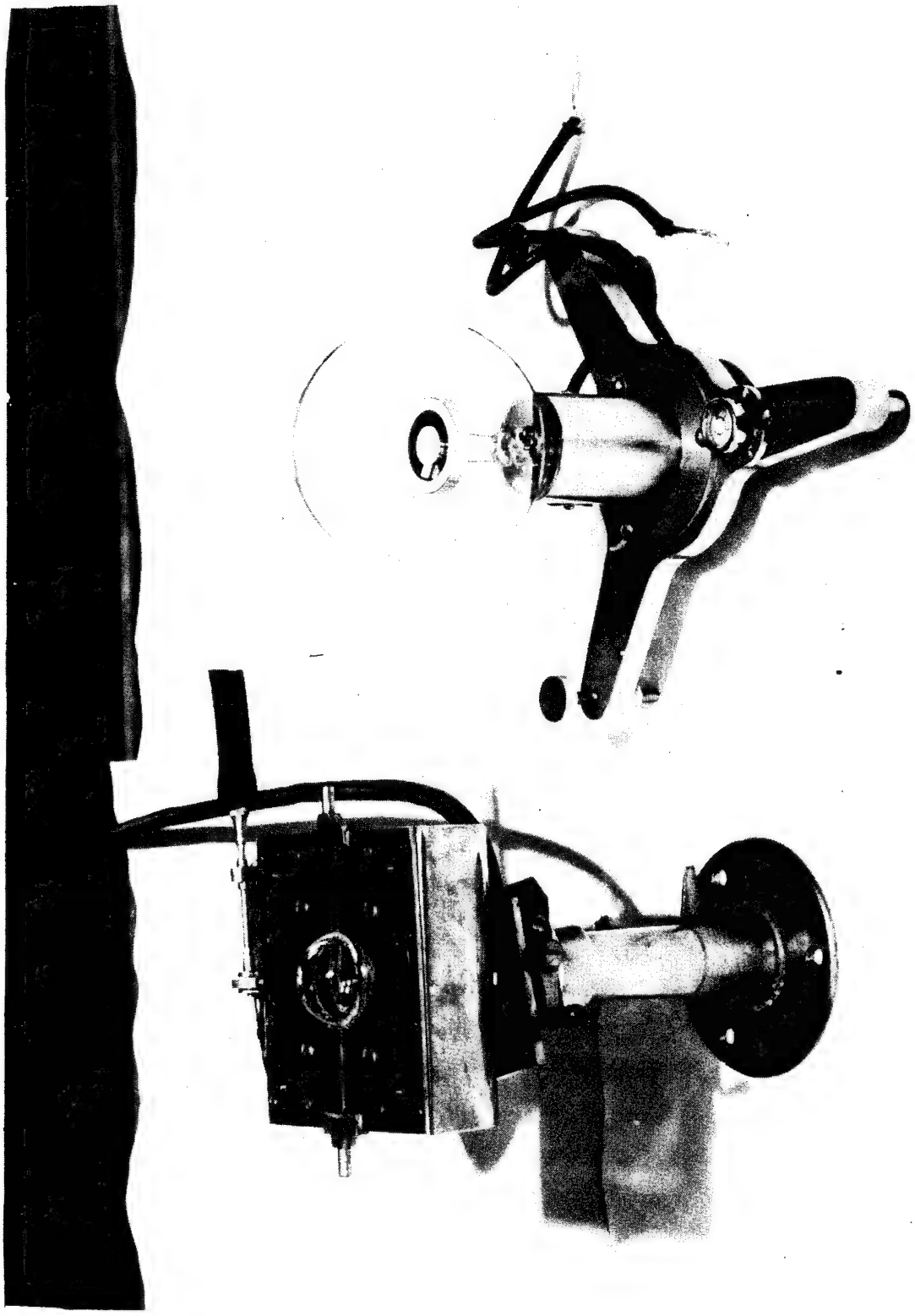
angle facing south. Since the largest filter we could get was 6 inches square, to obtain an exposed cloth of 1 foot square it was necessary to use four of these filters which were cemented in a suitable frame and placed above the cloth.

Two interesting devices have added to the excellence and accuracy of the records. One is in the automatic control by suitable relays, of the brightness of the galvanometer spot. To minimize heating of the hemispherical domes when the shutter is opened, and thus to avoid zero drift, we arranged to open the shutters for 5 seconds in each 5 minutes. In order to make sure that this exposure of but 5 seconds in 5 minutes gave a correct picture of the variation in radiation during a day, we made planimeter readings on the micromax recordings of the Eppley on various types of days, thus summing up the total area for each day. Then we summed up a second time on the same days using the readings at 5 minute intervals only. The two results showed excellent agreement, even on the most irregular traces. Since the galvanometer spot is moving when the shutter is open, its trace is much fainter than stationary on zero, resulting in a wide zero mark if the moving trace is visible. The galvanometer light is arranged to flash on dimly 5 seconds before the shutter opens, and at the instant it opens to shine brightly, then cut off completely as the shutter closes. As a result the recorded trace is uniform and clear, permitting accurate measurement.

The second device records on each record the sensitivity of the apparatus at that moment. This gives us a means to correct for changes in sensitivity due to temperature or humidity variation, either in galvanometer deflections or in the photographic paper itself. The device is to insert a small known resistance of about .1 ohm in each galvanometer circuit and by a system of switches and relays to pass at will a known current, kept constant through potentiometer control, into this resistance. This gives a definite galvanometer deflection whose magnitude is a measure of the instantaneous sensitiveness of the setup.

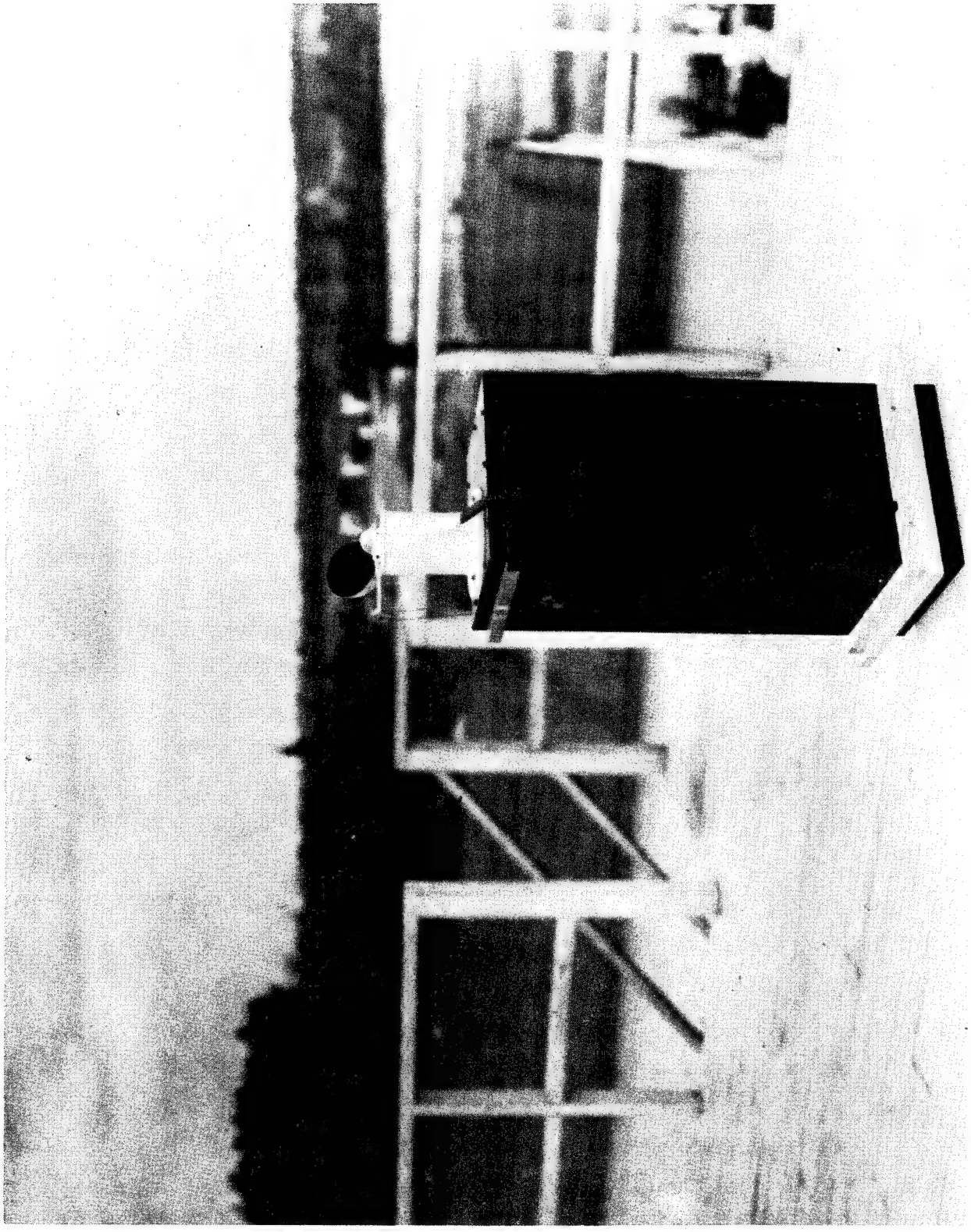
The assembly and the construction of all this equipment has been a considerable task. Even with good priorities some of the more important items were delayed well beyond the desired starting time of the text. However, significant observations have been recorded since starting in July and enough measurements have been taken so that the present series can be extended back to cover with fair accuracy the whole period of the test.

While we anticipate that additional improvements in technique will be developed it is believed that the present plan provides all the significant data which, when combined with proper analysis of the fabric after exposure, will furnish considerable evidence concerning the causes of fabric deterioration.

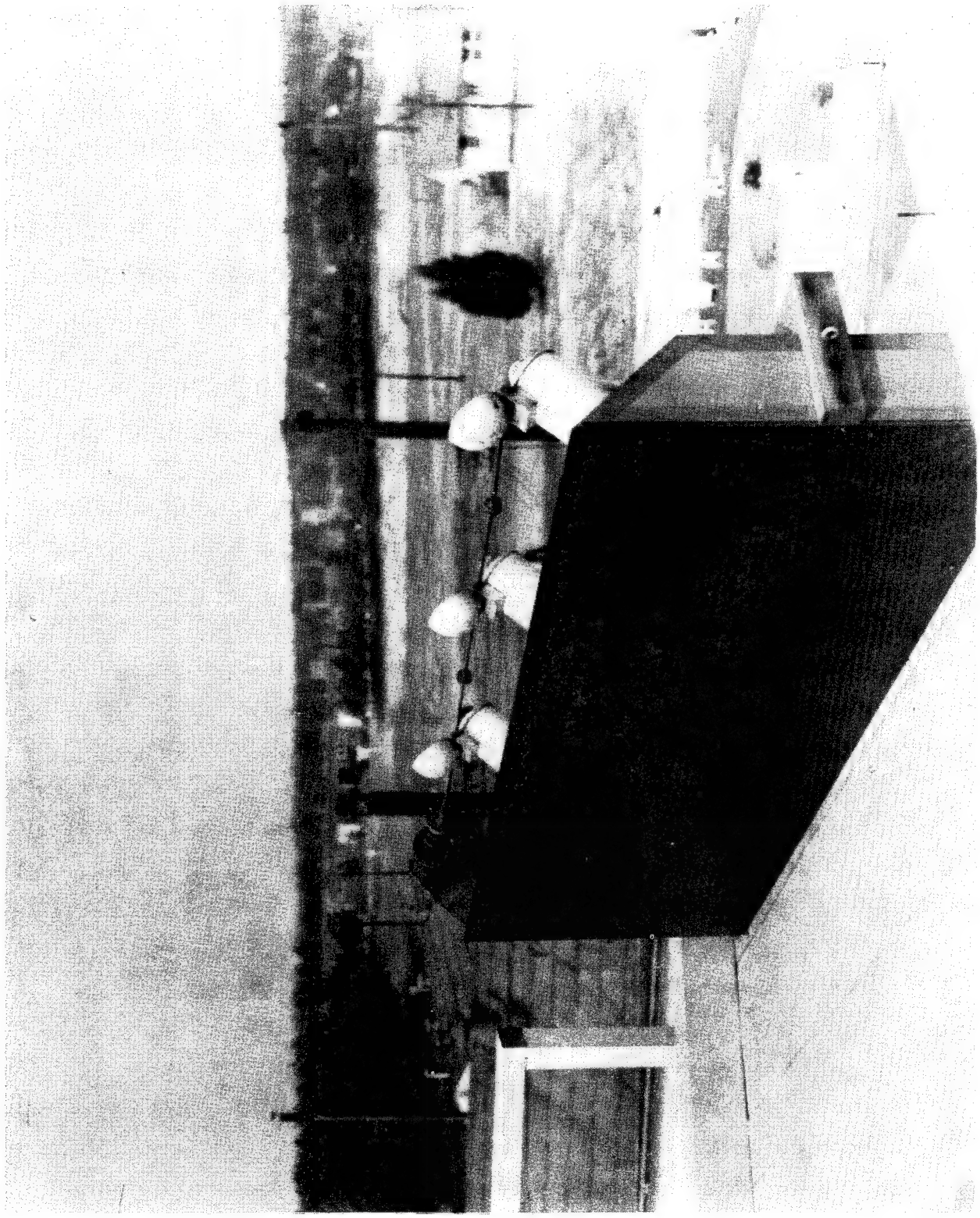


1. Smithsonian Pyranometer on left. This instrument was used to calibrate all radiation instruments except the Photo-Cell.

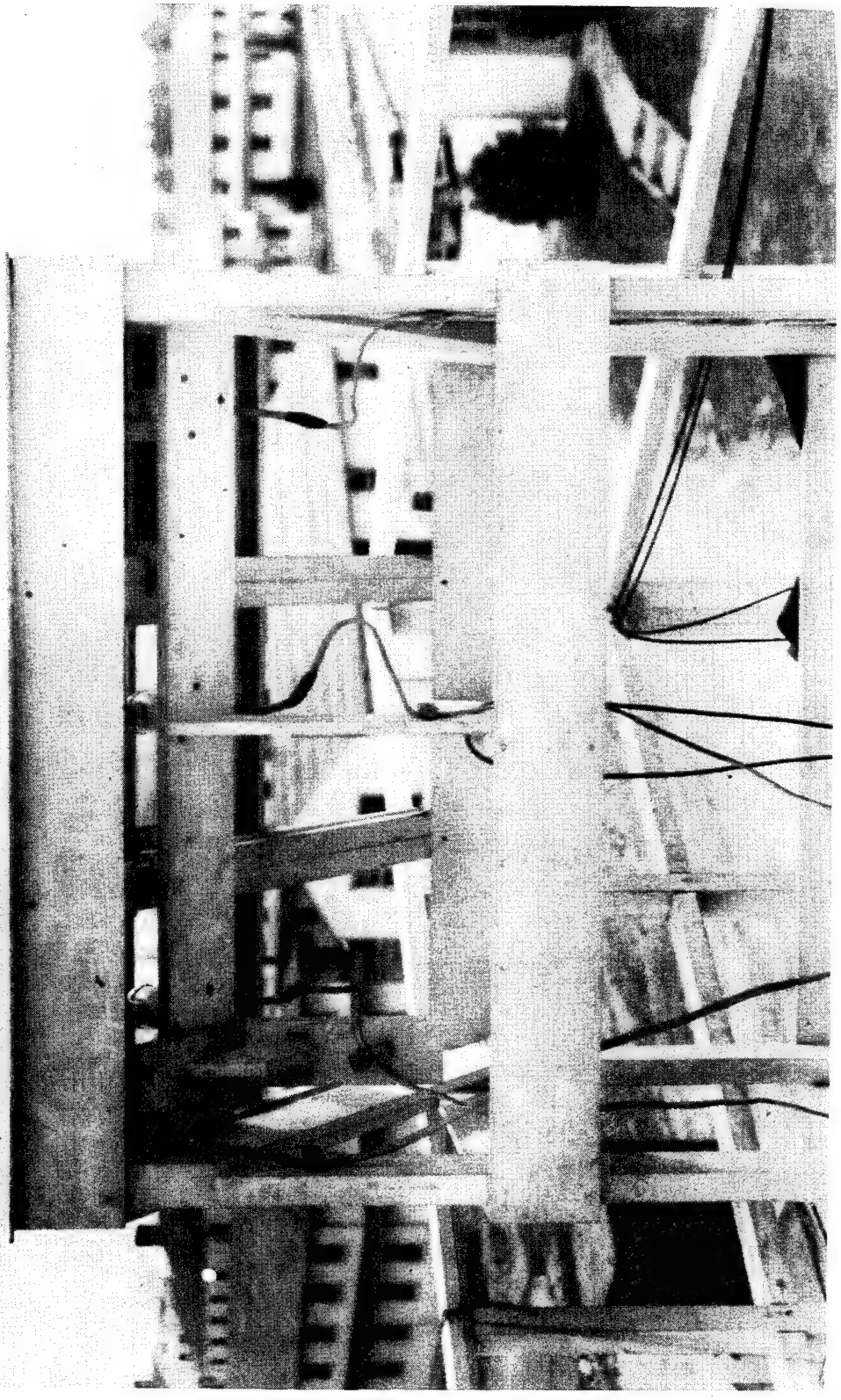
   Eppley Pyrheliometer on right. One of these instruments was used to measure the radiation on a horizontal surface and another the radiation on a surface facing south at 45°.



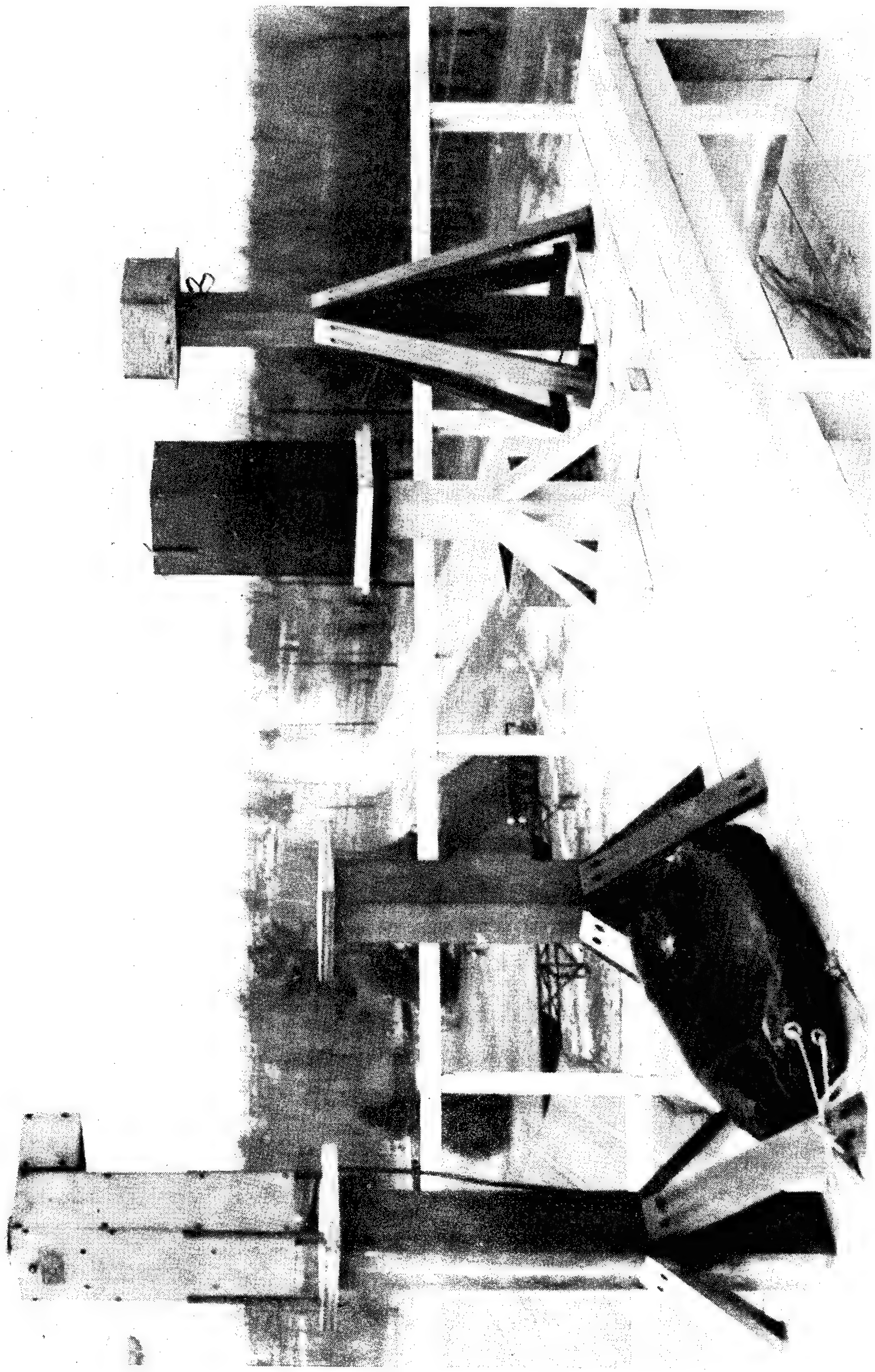
2. Thermocouple under quartz dome for measuring the radiation on a horizontal surface.



3. Three thermocouple instruments for measuring radiation on a surface facing east at 45°. One with quartz dome, the second with a yellow glass dome (Corning filter #3385), and the third with a black glass dome (Corning #2540). At far end of mounting for instruments is an electromagnet for opening and closing the hemispherical covers.



4. Rear view of support for holding three sets of filters quartz, yellow, and black. These filters face south at 45°. Under these filters are thermocouple instruments similar to those shown on No. 3. Each instrument has a quartz dome.



5. View of instruments for measuring radiation on a horizontal surface. Zr photo-cell, left; thermo-couple, center; and Eppley pyrheliometer, right.

6. Adjusting pyranometers which are mounted to measure the radiation on a surface facing east at 45°. These instruments were used for some time before the recording thermocouples were installed on the tower.

7. Taking radiation measurements with the pyranometers shown in No. 6.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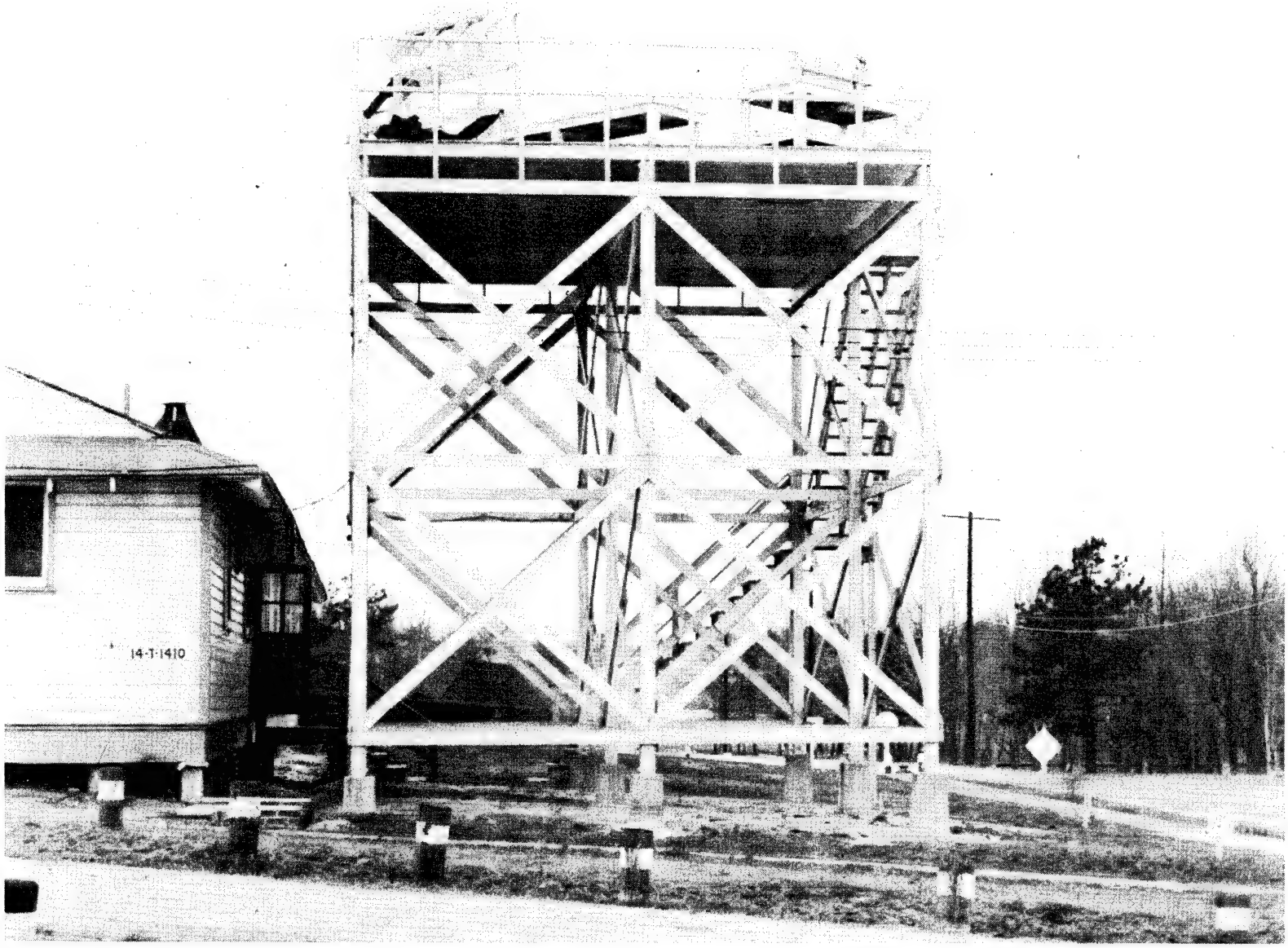
8. View of tower showing the position of the instruments in Nos. 2, 3, and 4.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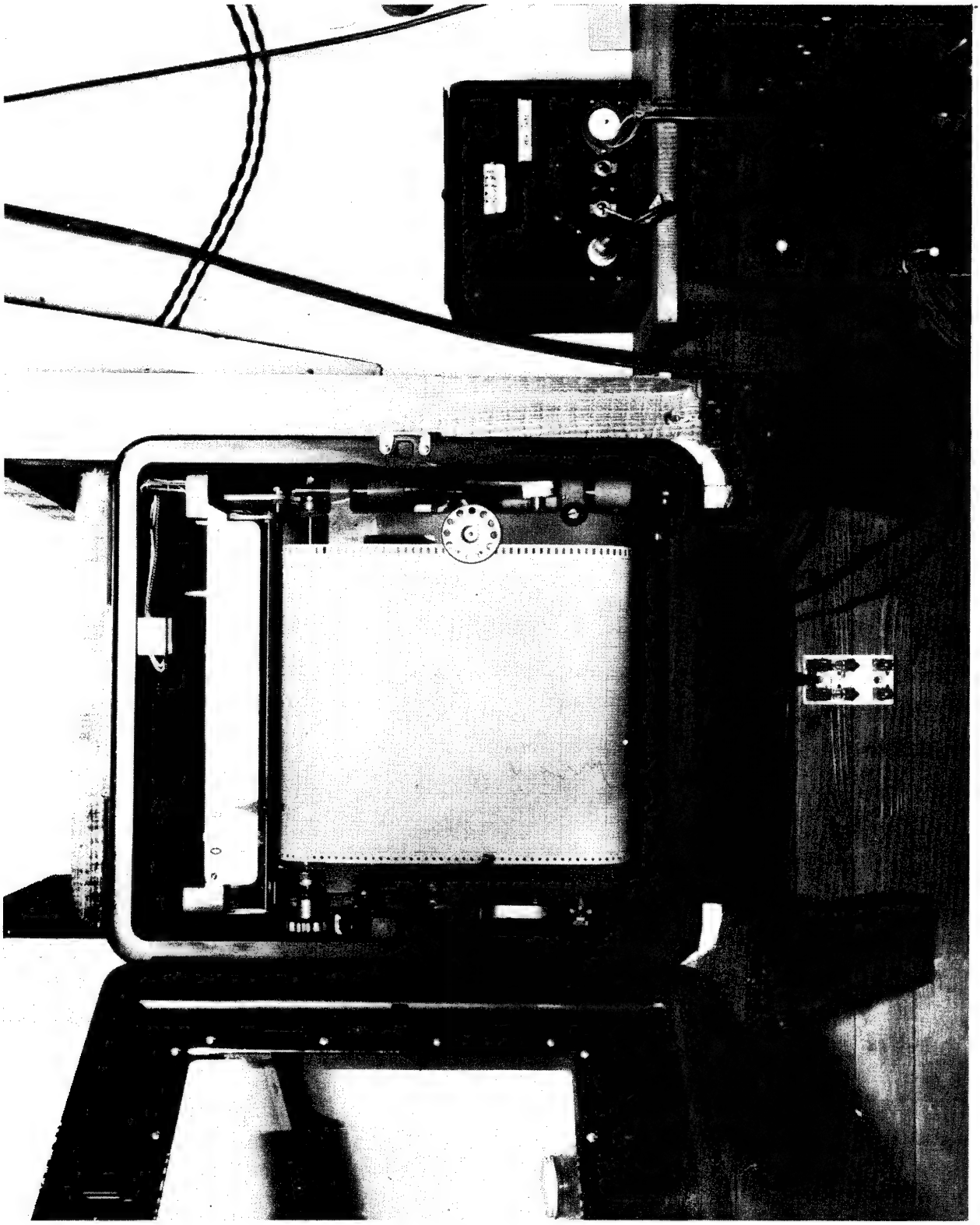
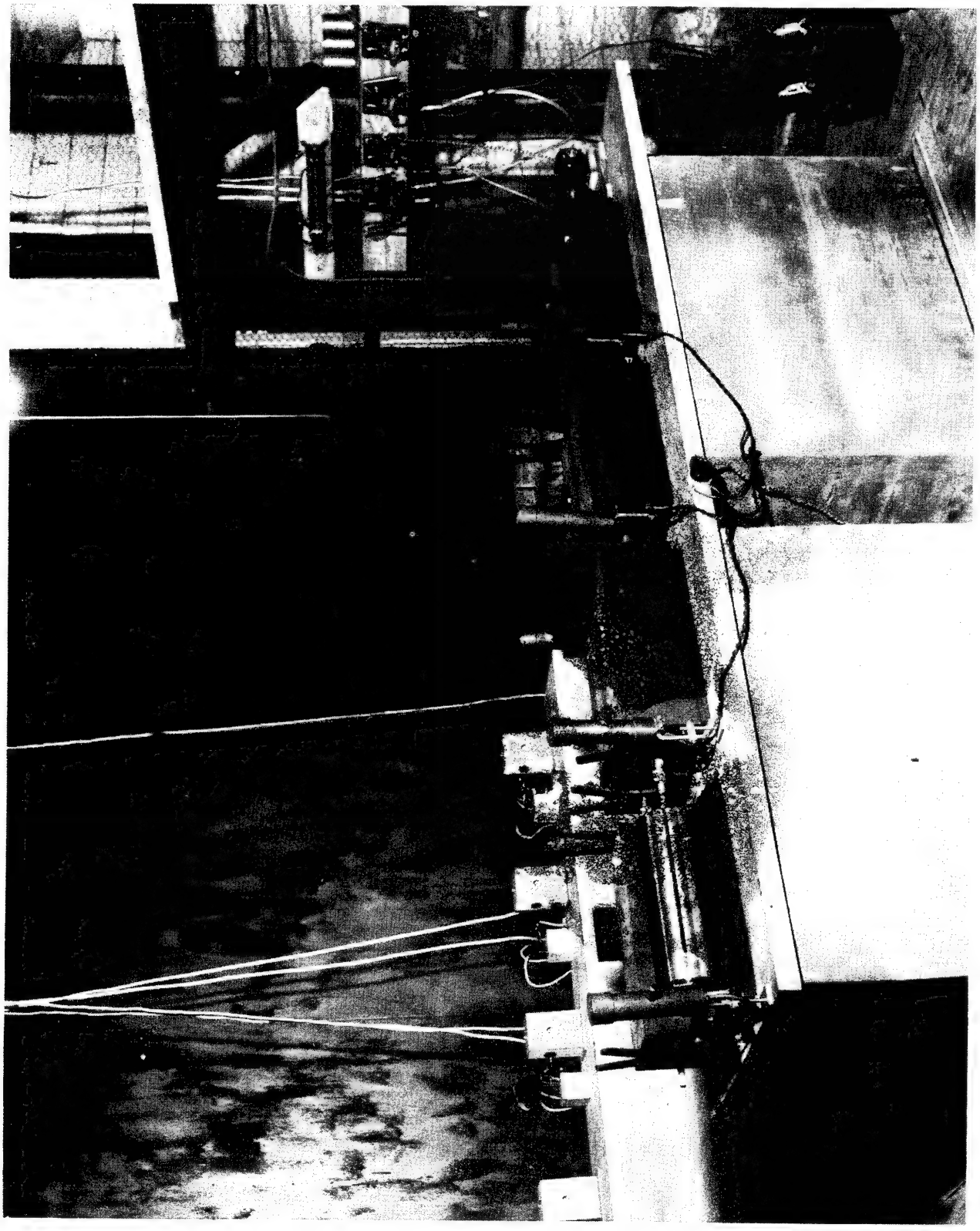
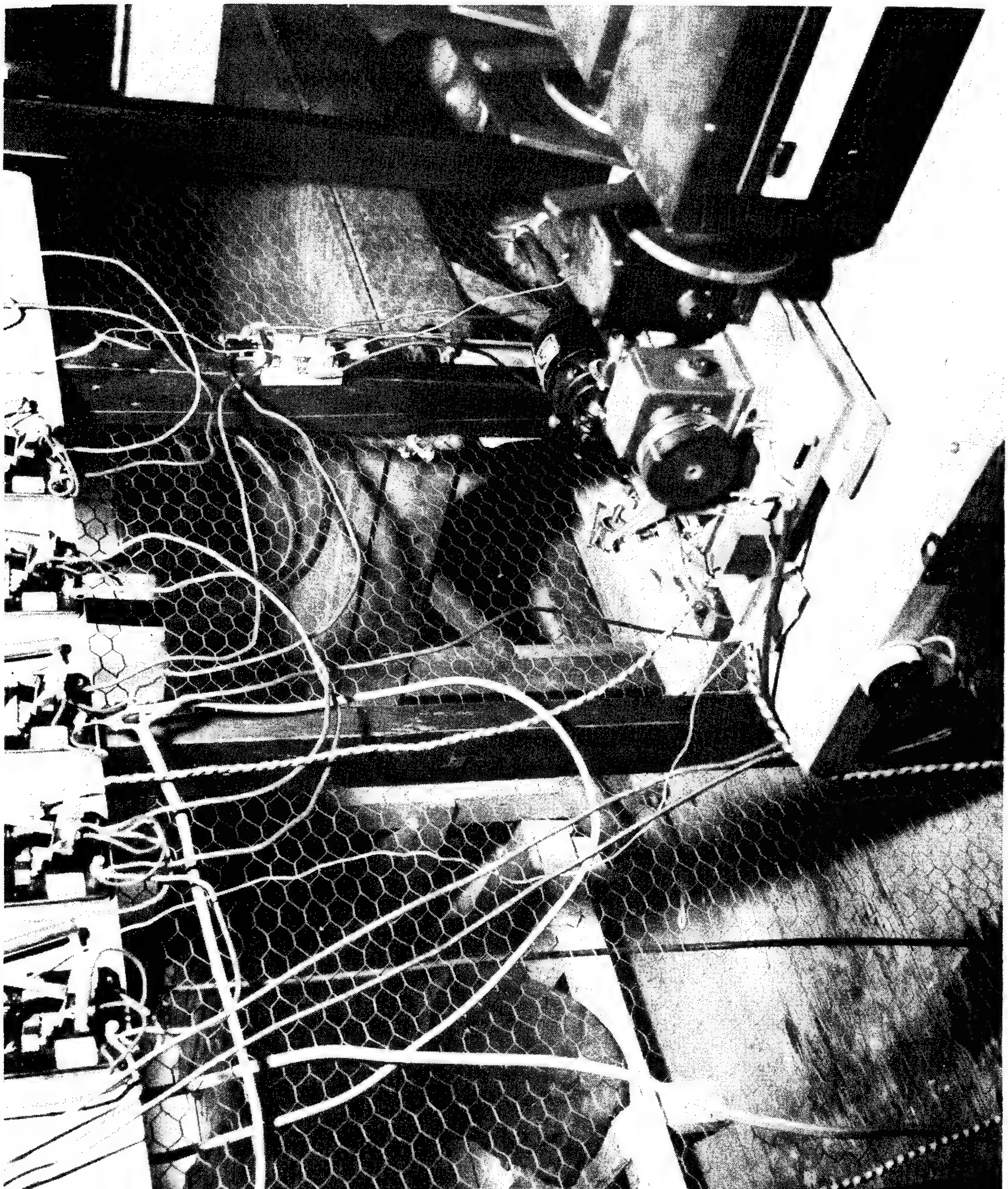
9. View of tower and instruments.



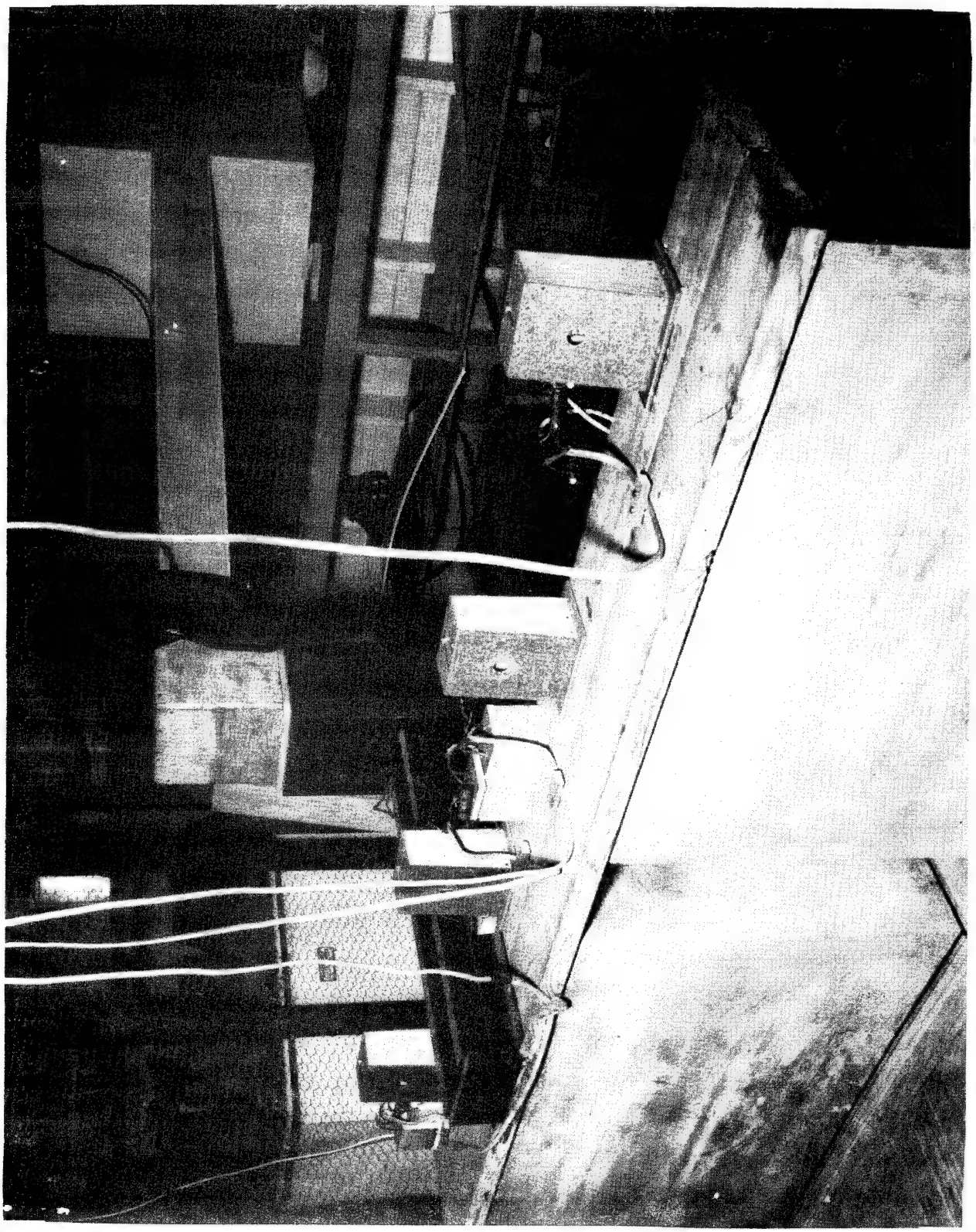
10. Leeds and Northrup micromax recorder connected to the Eppley pyrheliometer shown in No. 5. The record on the recorder is the record for a cloudy day. On the right counter for recording the ultraviolet radiation received on the Zr photo-cell shown in No. 5.



11. General view of the recording room: On the pier in foreground are the recording drums (one uncovered), and the galvanometer lamps; on the pier on left are four of the galvanometers; on the wall are relays for opening and closing the shutters of the instrument on the tower.



12. View of the motor and reduction gears for driving the drums and the commutator. The commutator is connected to the relays on the wall to open and close shutters and turn the galvanometer lights on and off.

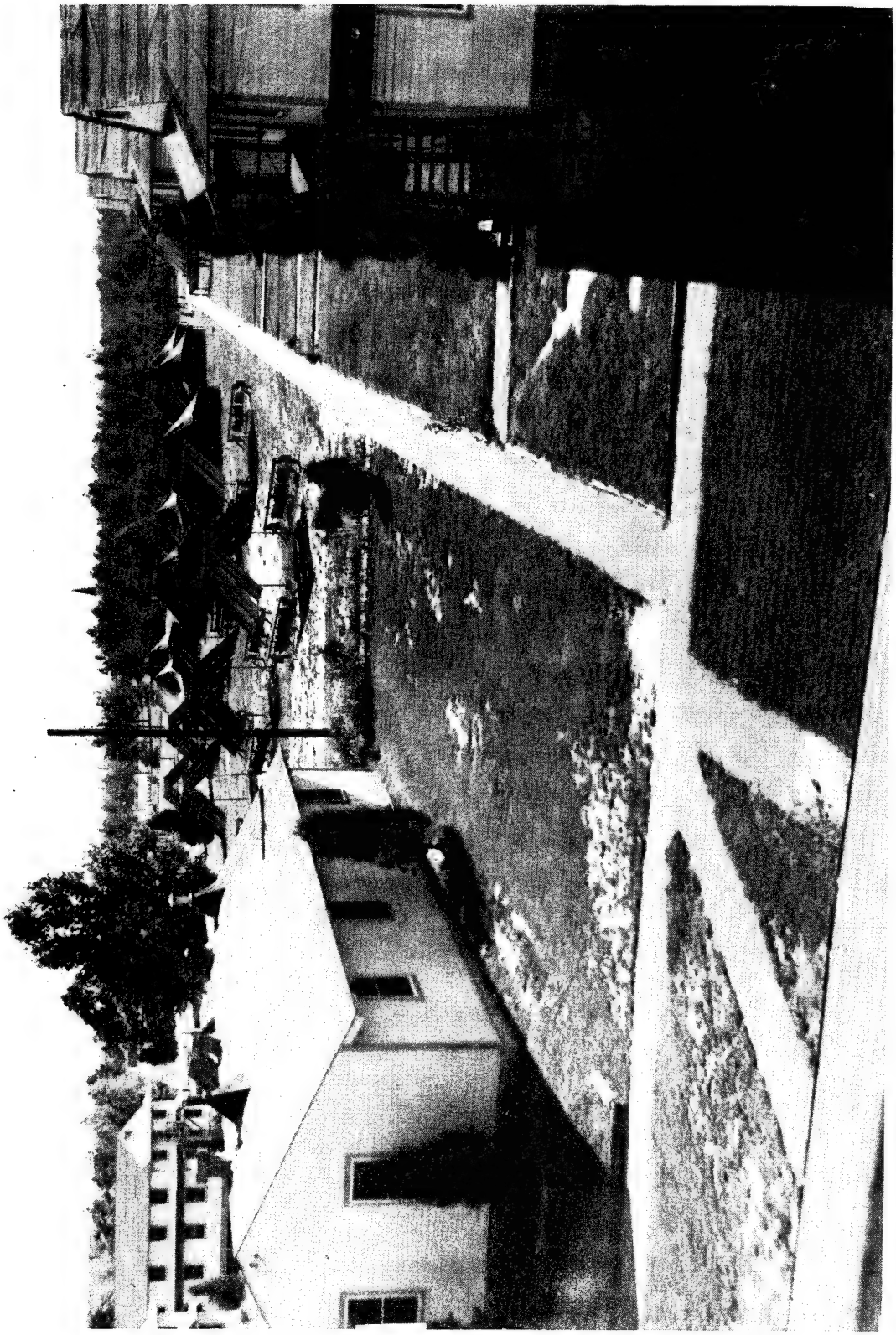


13. View of the galvanometers not shown in No. 11. The galvanometer used with the pyranometer is mounted on the left end of pier.

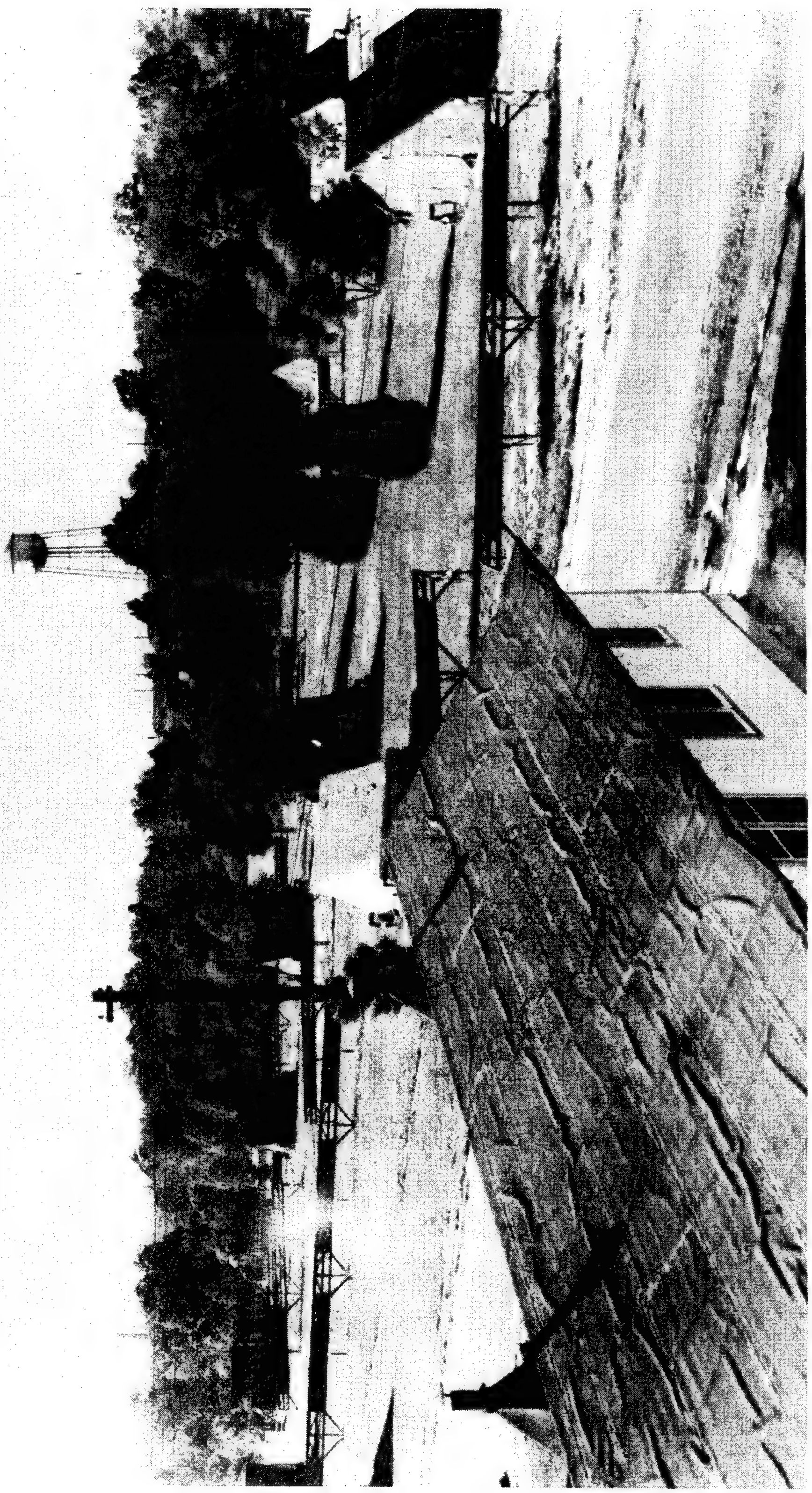
14. View of some of the filter panels. Thermocouples for measuring the temperature of the cloth are attached as shown on the two exposed panels. Lead wires from the thermocouples are connected to a switch in the box in front of panels.


OFF LIMITS
ALL PERSONNEL

15. General view of the filter panels.



16. View of tentage area looking southwest from the tower.



17. View of the tentage area looking west from tower.


OFF
LIMITS

18. View of tentage area looking north from south end of area.

19. View of tentage area showing racks for holding samples of thread.

20. View of the tentage area taken from an airplane.

SECTION II

SOLAR RADIATION ON EXPOSED ARMY TENTS AND CANVAS CAMP LEE, VA., JANUARY AND FEBRUARY, 1946

The first complete series of measurements of solar radiation in connection with the exposure test of canvas at the Quartermaster Corps, Camp Lee, Virginia was obtained starting in January, 1946. Considerable data had of course been obtained in previous months which also gave opportunity for the calibration of the instruments. The complete data obtained in detail in January and February can be regarded as representative and significant.

From the discussion in the paper "Techniques of Solar Radiation" it will be evident that the data collected fall in three types, as follows:

A. Eppley Pyrheliometer readings

A general picture of solar radiation is shown by Figure 1 which illustrates the recording of solar radiation which fell on a horizontal surface on a fairly clear day. During this day a total of 251.54 calories per sq. cm. were received from the combined sun and sky. On a typical summer day, with more hours of light and with the sun higher in the sky, the total will be two to three times greater.

B. Smithsonian instrument readings

Figures 2 to 7 show this type of recording, as received under the various arrangements on this same day. With the Smithsonian instrument the readings are made each 5 minutes during the day. The lower line of dots shows the zero readings. The other dots show the intensity of radiation for each 5 minutes during the day. These start at zero at the beginning of the day, rise to a maximum, and again approach zero after sunset. The occasional dots in the line across about the middle of the record are the calibration points registered with a constant current.

By averaging the values received hour by hour during January we obtain a summary of the measurements for the whole month, shown in Figures 8 and 9. It is interesting, in Figure 8, to compare the curve of the total radiation on a horizontal plane with that of the total received on a slope 45° to the east. The latter has a maximum about 10:30 in the morning and drops off rapidly in the afternoon. Also, the relationships between the three bands (ultraviolet, visible and infrared) change markedly during the day. Many interesting variations are found in the individual day-to-day records.

C. The readings of the Rentschler ultraviolet meter are not automatically recorded but are read hourly from a counter. These readings for the months of January and February are given in Table III.

The three tables, I, II-a to II-h, and III, give a complete summary of the results obtained at Camp Lee, Va., for the first two months of 1946. Table I gives the January summary by days. Table II-a to II-h gives the same data for January and February, each section summarizing one type of measurement. The units throughout are gm-calories per square centimeter per hour or per day as marked. To convert to B.T.U.'s per square foot per hour or per day, these values should be multiplied by 3.69.

In the summary for each hour of each day, and also for the entire day, are recorded:

1. total energy received on a horizontal surface
2. total energy received on a surface 45° to the east
3. U.V. (below 4700 A) on a surface 45° to the east
4. Visible (4700-7600 A) on a surface 45° to the east
5. I. R. (7600-35000 A) on a surface 45° to the east
6. energy through vycor filter placed 45° to the south
7. energy through yellow filter placed 45° to south
8. energy through black filter placed 45° to south

The vycor filter transmits freely through the range 2500 to 40000 Angstrom units. The yellow filter transmits about 80 per cent in the range 4600 to 3500 Angstrom units. The black filter transmits about 80 per cent in the range 7600 to 35000 Angstrom units.

Due to a number of variable factors, the spectral distribution of energy falling on the three surfaces, horizontal, 45° to east, and 45° to south, changes from hour to hour and from day to day. In general the energy in the U.V. part of the spectrum is less than in the I.R. part when the surface receives direct sunlight, and the reverse is true when only sky light is received on the surface. This is evident if we examine the average values, for example, for the month of January. If for each hour of the average day we take the ratio of the visible 45° to E. to the total 45° to E., we find the ratio remains nearly constant at about 52% for each hour of the day. However, the ratios $\frac{\text{U.V. 45° to E.}}{\text{Total 45° to E.}}$ and $\frac{\text{I.R. 45° to E.}}{\text{Total 45° to E.}}$ do not remain constant. The U.V. ratios start at about 15% in the early morning and increase during the day to 30% while the I. R. ratios are the reverse, starting at 30% and decreasing to about 17%.

In order to obtain the results given in 3, 4, and 5 above we measured the energy received through quartz, yellow and black filters. These values are corrected for losses due to reflection and average transmission. Then the value for the quartz filter minus the value for the yellow filter gives the U.V. energy. The yellow minus the black gives the energy in the visible portion of the spectrum, and the black filter gives the I. R. energy.

Study of the total energy received by the exposed panels and tent fabrics in succeeding months, as correlated with the analyses of these fabrics before and after exposure, will, it is hoped yield valuable data concerning the radiation upon the fabrics.

TABLE I

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South through Filters		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 1, 1946.				
7-8	.36	.45	.05	.16	.24	.35	.30	.10
8-	8.59	9.77	1.33	4.52	3.92	5.22	3.95	1.30
9-	19.78	22.73	2.86	10.99	8.88	14.72	11.34	3.63
10-	30.43	27.75	3.79	13.50	10.46	32.00	24.75	8.26
11-	40.53	30.22	6.50	13.46	10.26	60.00	43.80	14.58
12-	38.86	22.71	4.67	10.82	7.22	45.50	30.85	10.29
13-	28.21	13.55	3.60	6.12	3.83	32.00	22.20	7.42
14-	30.42	9.06	2.64	4.22	2.20	42.00	31.30	10.45
15-	17.05	5.60	1.61	2.65	1.34	20.00	13.88	4.64
16-	5.46	2.07	.67	.98	.42	2.21	1.49	.45
17-	.20	.10	.03	.06	.01	.10	.08	.00
Total	219.89	144.01	27.75	67.48	48.78	254.10	183.94	61.33
				January 2				
7-8	1.17	3.09	.26	1.25	1.58	1.50	.80	.67
8-	8.56	21.27	2.17	10.85	8.25	6.11	7.66	3.12
9-	21.48	33.92	4.24	20.50,	9.18	14.18	9.46	3.89
10-	28.06	29.92	4.12	16.98	8.82	48.20	32.45	11.95
11-	38.94	28.68	5.71	15.29	7.68	68.50	45.48	15.16
12-	42.74	19.07	3.95	9.05	6.07	67.85	46.75	15.51
13-	42.24	8.55	2.20	4.00	2.35	64.25	43.15	14.72
14-	32.81	5.38	1.52	2.35	1.51	47.50	36.10	11.69
15-	19.45	3.10	.91	1.39	.80	17.25	14.53	5.44
16-	5.78	1.20	.37	.63	.20	1.87	1.20	.35
17-	.20	.60	.21	.36	.03	.00	.00	.00
Total	241.43	154.78	28.66	82.65	46.47	335.21	237.58	82.50
				January 3.				
7-8	.61	.30	.04	.19	.07	.21	.15	.06
8-	3.97	2.95	.68	1.46	.81	1.96	1.24	.35
9-	8.60	7.15	1.30	3.92	1.93	4.61	2.94	.76
10-	16.83	14.36	2.77	8.24	3.35	14.81	9.09	2.83
11-	31.91	17.62	3.36	10.01	4.25	22.49	14.14	4.26
12-	28.28	19.38	4.47	10.52	4.39	24.52	15.80	4.99
13-	22.34	15.54	3.66	8.08	3.80	16.60	10.86	3.15
14-	13.71	9.77	2.12	5.31	2.34	9.91	6.50	1.87
15-	7.01	4.81	1.17	2.72	.92	3.59	2.27	.56
16-	2.10	1.25	.46	.63	.16	.89	.52	.10
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	125.36	93.13	20.03	51.08	22.02	99.59	63.59	18.93

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 4				
7-8	.41	.78	.05	.38	.35	.48	.28	.15
8-	4.48	3.65	.83	1.81	1.01	2.32	1.47	.42
9-	11.13	9.59	2.03	4.88	2.68	6.50	4.12	1.19
10-	11.27	8.55	1.78	4.59	2.18	5.67	3.55	.91
11-	15.47	12.51	2.84	6.52	3.15	8.49	5.42	1.44
12-	26.49	18.53	4.23	9.18	5.12	19.95	13.26	3.74
13	31.06	12.91	3.59	6.11	3.21	38.35	25.95	8.33
14-	30.24	6.01	2.20	2.90	.91	43.56	28.75	9.75
15-	10.10	5.60	1.49	2.77	1.34	7.41	5.26	1.65
16-	4.29	2.26	.56	1.14	.56	1.96	1.28	.35
17-	.41	.08	.03	.04	.01	.06	.03	.00
Total	145.35	80.47	19.63	40.32	20.52	134.75	89.37	27.93
				January 5				
7-8	.79	.96	.13	.44	.39	.52	.36	.12
8-	9.23	23.14	2.51	11.17	9.46	6.87	8.16	2.81
9-	22.25	35.38	4.71	18.33	12.34	13.97	11.46	3.59
10-	26.87	30.62	5.21	15.68	9.73	29.86	18.19	6.85
11	23.26	17.42	3.78	9.02	4.62	14.68	9.48	2.57
12-	39.27	22.76	6.05	10.55	6.16	59.57	38.66	11.41
13	15.70	10.30	2.53	5.35	2.42	8.07	6.01	1.55
14-	22.50	9.91	2.66	4.93	2.32	19.47	12.93	3.86
15-	10.36	6.42	1.65	3.24	1.53	6.91	4.65	1.26
16-	3.61	2.20	.63	1.10	.47	1.92	1.25	.34
17-	.00	.05	.03	.02	.00	.05	.02	.00
Total	173.84	159.16	29.89	79.83	49.44	161.89	111.20	34.86
				January 6				
7-8	.30	.26	.06	.11	,09	.14	.09	.03
8-	5.90	4.64	1.07	2.75	.82	3.00	1.80	.45
9-	7.55	6.19	1.70	3.37	1.12	3.76	3.00	.59
10-	14.66	11.60	2.79	6.76	2.05	7.88	5.70	1.14
11-	8.80	6.79	1.80	4.16	.83	4.00	3.10	.42
12-	9.72	7.56	2.03	4.57	.96	4.25	3.25	.44
13-	10.64	8.73	2.40	5.16	1.17	5.02	4.18	.56
14-	7.95	6.11	1.61	3.55	.95	3.89	3.00	.48
15-	4.41	3.24	.96	1.83	.45	1.87	1.35	.18
16-	2.47	1.47	.48	.74	.25	.95	.65	.11
17-	.35	.01	.01	.00	.00	.00	.00	.00
Total	72.75	56.60	14.91	33.00	8.69	34.76	26.12	4.40

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 7				
7-8	.71	.35	.05	.23	.07	.24	.11	.03
8-	4.52	3.00	.70	1.90	.40	1.77	1.24	.24
9-	11.66	9.32	1.87	6.50	.95	6.07	4.27	.92
10-	10.20	8.17	1.92	5.20	1.05	5.11	3.57	.63
11-	7.24	5.25	1.29	3.49	.47	3.33	2.15	.33
12-	2.51	3.00	.76	1.92	.32	2.58	1.64	.24
13-	5.29	2.00	.56	1.24	.20	3.03	2.05	.34
14-	9.43	1.50	.42	.93	.15	2.28	1.54	.24
15-	3.64	1.00	.30	.61	.09	1.84	1.38	.20
16-	2.83	.50	.15	.30	.05	1.05	.68	.15
17-	.00	.00	.00	.00	.00	.01	.00	.00
Total	58.03	34.09	8.02	22.32	3.75	27.31	18.63	3.32
				January 8				
7-8	.83	.71	.08	.48	.15	.43	.30	.07
8-	4.90	4.49	.65	2.85	.99	2.94	2.06	.46
9-	8.60	7.39	1.39	4.39	1.61	5.25	3.73	.43
10-	3.96	2.76	.74	1.67	.35	1.68	1.13	.15
11-	3.96	7.25	2.11	3.99	1.15	4.52	3.10	.53
12-	9.19	5.32	1.07	3.49	.76	3.50	2.36	.38
13-	6.85	3.69	.91	2.30	.48	2.23	1.57	.21
14-	4.84	2.40	.66	1.49	.25	1.54	.95	.11
15-	3.23	2.78	.76	1.63	.39	1.73	1.15	.19
16-	3.71	.40	.16	.19	.05	.23	.10	.01
17-	.66	.00	.00	.00	.00	.00	.00	.00
Total	46.77	37.19	8.53	22.48	6.18	24.05	16.45	2.50
				January 9				
7-8	.61	.32	.05	.21	.06	.23	.10	.03
8-	2.74	1.81	.42	1.14	.25	1.40	.91	.13
9-	5.17	4.92	.94	3.50	.48	2.39	1.55	.21
10-	9.51	7.89	1.87	5.02	1.00	5.01	3.40	.57
11-	10.65	8.67	2.05	5.52	1.10	6.06	4.05	.85
12-	9.39	7.22	1.75	4.62	.85	5.65	3.85	.79
13-	9.44	4.77	1.15	3.00	.62	5.72	3.92	.81
14-	8.15	3.54	.84	2.25	.45	5.48	3.72	.76
15-	3.45	2.78	.76	1.63	.39	2.62	1.85	.31
16-	1.02	.38	.15	.18	.05	.78	.55	.12
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	60.13	42.30	9.98	27.07	5.25	35.34	23.93	4.58

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 10				
7-8	.87	4.50	.34	1.61	2.55	1.05	.75	.30
8-	11.04	28.26	2.81	16.37	9.08	11.15	10.48	3.14
9-	24.00	37.46	5.21	21.50	10.75	14.85	12.88	3.64
10-	35.59	38.61	7.16	21.08	10.37	48.95	32.35	11.38
11-	43.18	32.28	7.43	16.65	8.20	67.20	46.05	14.14
12-	44.85	21.25	6.13	10.12	5.00	71.15	47.12	14.22
13-	40.65	8.81	3.12	4.17	1.42	57.40	41.70	12.77
14-	31.02	4.90	2.06	2.39	.45	39.65	31.80	9.84
15-	15.74	4.52	1.63	2.33	.56	15.65	14.32	4.57
16-	5.01	2.89	.74	1.61	.54	2.65	1.95	.57
17-	.61	.12	.04	.08	.00	.09	.02	.00
Total	252.59	183.50	36.67	97.91	48.92	329.79	239.42	74.57
				January 11				
7-8	.87	.88	.18	.46	.24	.55	.39	.11
8-	4.80	4.30	.93	2.41	.96	2.69	1.89	.47
9-	8.10	6.64	1.45	3.90	1.29	3.79	2.68	.56
10-	11.25	9.07	2.36	5.02	1.69	7.53	5.32	1.18
11-	12.32	9.61	2.21	5.60	1.80	6.66	4.55	1.02
12-	7.34	5.83	1.39	3.58	.86	3.65	2.49	.40
13-	6.57	5.30	1.30	3.20	.80	3.03	2.05	.34
14-	4.63	3.79	.99	2.32	.48	2.25	1.53	.24
15-	4.27	3.16	.78	1.90	.48	1.85	1.36	.21
16-	2.49	1.75	.41	1.01	.33	1.07	.70	.16
17-	.15	.02	.01	.01	.00	.01	.00	.00
Total	62.79	50.35	12.01	29.51	8.93	33.08	22.96	4.69
				January 12				
7-8	.82	.99	.12	.51	.36	.72	.50	.20
8-	7.79	10.52	1.42	4,82	4.28	4.59	4.15	1.18
9-	14.91	18.43	2.25	9.71	6.47	11.83	10.31	2.79
10-	15.01	12.67	2.63	6.77	3.27	13.97	11.46	3.59
11-	20.46	14.94	3.64	7.22	4.08	29.80	18.18	6.85
12-	32.46	17.94	4.67	8.37	4.90	38.15	25.90	8.32
13-	31.08	14.32	3.93	6.91	3.48	43.01	28.10	9.50
14-	30.72	9.36	2.85	4.59	1.92	28.40	17.25	6.50
15-	15.64	7.33	2.05	3.47	1.81	8.70	7.16	2.28
16-	6.03	3.33	.84	1.71	.78	3.87	2.20	.59
17-	.66	.16	.05	.09	.02	.14	.07	.02
Total	175.58	110.00	24.45	54.17	31.37	183.18	125.28	41.82

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 13				
7-8	1.67	2.68	.31	1.30	1.07	.75	.50	.18
8-	8.94	13.63	1.84	7.31	4.48	12.00	7.17	2.30
9-	30.02	39.60	5.88	21.61	12.11	20.00	14.94	4.26
10-	41.62	40.92	6.58	22.63	11.71	45.45	31.84	10.13
11-	23.13	19.43	4.14	10.57	4.72	17.94	12.64	3.39
12-	23.41	17.64	3.94	9.64	4.06	13.21	9.46	2.40
13-	36.31	12.42	3.47	6.40	2.55	38.45	30.47	8.75
14-	35.76	5.38	2.27	2.52	.59	47.87	36.78	11.48
15-	22.18	4.25	1.69	2.10	.46	20.17	18.75	6.06
16-	7.99	2.37	.83	1.29	.25	2.53	1.75	.51
17-	.61	.17	.05	.12	.00	.12	.05	.00
Total	231.64	158.49	31.00	85.49	42.00	218.49	164.35	50.46
				January 14				
7-8	2.72	4.32	.24	2.19	1.89	1.86	1.36	.52
8-	11.75	27.15	2.70	14.51	9.94	15.30	14.77	4.43
9-	26.64	41.60	5.85	22.54	13.21	18.34	15.96	4.51
10-	38.24	42.33	7.65	22.28	12.40	56.57	37.43	13.16
11-	46.96	34.38	7.58	17.26	9.54	76.83	52.26	16.09
12-	49.07	23.31	6.64	10.80	5.87	79.36	52.51	15.88
13-	43.21	10.56	3.88	4.87	1.81	61.28	46.43	13.63
14-	35.55	6.09	2.34	2.97	.78	44.52	35.69	11.07
15-	20.14	4.33	1.59	2.25	.49	18.57	17.85	5.69
16-	7.16	2.49	.78	1.43	.28	2.63	1.92	.55
17-	.66	.13	.01	.11	.01	.10	.03	.00
Total	282.10	196.69	39.26	101.21	56.22	395.36	276.21	85.53
				January 15, 1946				
7-8	.41	.33	.08	.20	.05	.17	.11	.02
8-	2.59	2.07	.51	1.28	.28	1.27	.83	.12
9-	4.67	3.67	.94	2.29	.44	2.17	1.41	.19
10-	6.61	5.23	1.37	3.26	.60	3.11	2.26	.27
11-	7.52	5.93	1.54	3.73	.66	3.62	2.41	.30
12-	7.04	5.74	1.50	3.60	.64	3.86	2.60	.32
13-	7.46	6.33	1.65	3.92	.76	4.02	2.85	.46
14-	5.48	3.36	.73	2.05	.58	3.64	2.42	.36
15-	1.63	1.52	.31	.93	.28	1.39	.93	.25
16-	.41	.87	.19	.50	.18	.68	.44	.12
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	43.82	35.05	8.92	21.76	4.47	23.93	16.26	2.41

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 16				
7-8	.36	.34	.08	.19	.07	.36	.25	.10
8-	6.59	7.50	1.35	4.06	2.09	2.85	2.05	.60
9-	20.21	22.87	3.66	12.67	6.54	11.80	9.31	2.51
10-	19.72	18.92	3.74	10.33	4.85	14.50	11.20	3.40
11-	36.33	27.34	5.94	14.34	7.06	29.70	18.05	6.80
12-	29.55	21.42	4.80	11.66	4.96	27.20	17.00	6.70
13-	26.38	17.54	4.08	9.64	3.82	22.45	15.90	5.80
14-	17.89	12.71	2.94	7.10	2.67	16.05	12.10	4.15
15-	7.35	5.60	2.14	2.41	1.05	8.80	7.16	7.28
16-	1.14	.73	.19	.47	.07	3.87	2.20	.59
17	.00	.00	.00	.00	.00	.05	.03	.01
Total	165.52	134.97	28.92	72.87	33.18	137.63	95.25	32.43
				January 17				
7-8	.00	.14	.08	.06	.00	.20	.15	.10
8-	1.33	1.27	.38	.82	.07	4.75	3.10	1.00
9-	4.74	3.77	1.08	2.33	.36	8.24	7.00	2.18
10-	14.51	12.77	3.23	7.36	2.18	16.85	12.62	4.00
11-	28.92	24.63	5.71	13.49	5.43	42.33	25.44	9.30
12-	46.79	25.56	7.16	12.92	5.48	67.91	45.48	14.38
13-	45.63	12.56	4.72	6.28	1.56	64.78	45.99	13.88
14-	33.40	6.73	2.80	3.42	.51	44.46	31.42	10.27
15-	20.17	4.72	1.82	2.50	.40	18.54	15.91	5.36
16-	7.09	2.50	.94	1.34	.22	2.30	1.57	.45
17-	.51	.17	.04	.12	.01	.12	.07	.01
Total	203.09	94.82	27.96	50.64	16.22	270.48	188.75	60.93
				January 18				
7-8	.51	.99	.15	.44	.40	.50	.34	.15
8-	4.85	4.00	.88	2.27	.85	2.46	1.65	.54
9-	12.00	10.30	2.24	5.81	2.25	7.18	4.82	1.30
10-	23.09	22.90	5.09	12.61	6.20	29.31	20.31	6.73
11-	43.43	33.02	6.67	17.35	9.00	71.00	46.55	15.07
12-	45.34	22.86	6.12	11.33	5.41	66.08	45.57	14.51
13-	42.44	12.04	4.25	5.87	1.92	58.31	41.24	13.08
14-	32.79	5.86	2.31	2.01	.54	42.99	30.27	9.80
15-	20.48	4.26	1.65	2.22	.39	18.43	16.22	5.51
16-	7.22	2.34	.83	1.29	.22	2.22	1.59	.41
17-	.51	.20	.05	.14	.01	.13	.10	.01
Total	232.66	118.77	30.24	61.34	27.19	298.61	208.66	67.11

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 19				
7-8	.41	.95	.12	.44	.39	.40	.25	.20
8-	4.63	3.82	.89	2.12	.81	2.29	1.45	.39
9-	9.35	7.80	1.78	4.40	1.62	5.09	3.26	.82
10-	16.31	13.20	2.91	7.42	2.87	9.36	6.13	1.65
11-	35.54	26.86	5.43	14.59	6.84	34.25	20.62	7.32
12-	40.87	25.97	12.73	7.38	5.86	46.93	29.86	9.56
13-	39.01	16.89	5.01	8.53	3.35	45.17	32.44	10.10
14-	30.29	10.51	3.04	5.55	1.92	28.32	21.80	6.93
15-	14.85	8.77	2.25	4.65	1.87	10.12	7.53	2.24
16	3.97	2.70	.70	1.42	.58	2.09	1.33	.35
17	.20	.08	.04	.04	.00	.01	.00	.01
Total	195.43	117.55	34.90	56.54	26.11	184.03	124.67	39.56
				January 20				
7-8	.00	.25	.05	.20	.00	.00	.00	.00
8-	1.78	1.10	.26	.72	.12	.75	.40	.08
9-	4.77	2.15	.45	1.47	.23	1.65	1.10	.13
10-	4.65	2.65	.48	1.83	.34	1.85	1.25	.27
11-	4.53	2.90	.60	1.90	.40	2.15	1.40	.35
12-	4.27	2.35	.45	1.35	.55	2.85	1.75	.45
13-	3.20	1.85	.40	1.10	.35	3.00	2.02	.45
14-	3.17	1.65	.35	.95	.35	2.35	1.60	.30
15-	.81	.56	.20	.26	.10	1.05	.65	.10
16-	.30	.30	.12	.16	.02	.42	.32	.05
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	27.48	15.76	3.36	9.94	2.46	16.07	10.49	2.18
				January 21				
7-8	.81	.90	.19	.45	.26	.50	.35	.25
8-	5.16	4.58	.94	2.59	1.05	2.79	1.85	.52
9-	10.81	9.13	2.01	5.13	1.99	6.46	4.24	1.13
10-	17.41	13.16	2.89	7.55	2.72	9.04	5.86	1.45
11	20.05	16.04	3.47	9.22	3.35	10.58	6.85	1.70
12-	19.16	14.32	3.11	8.33	2.88	9.75	6.35	1.54
13-	16.26	11.95	2.66	6.88	2.41	7.82	5.10	1.25
14-	16.60	12.95	2.83	7.25	2.87	10.82	7.14	1.89
15-	12.39	8.24	1.86	4.58	1.80	7.25	5.05	1.40
16-	5.25	3.04	.73	1.72	.59	2.22	1.43	.36
17-	.96	.28	.10	.13	.05	.20	.13	.03
Total	124.86	94.59	20.79	53.83	19.97	64.43	44.35	11.52

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 22				
7-8	.20	.48	.05	.43	.00	.06	.02	.00
8-	.41	.83	.19	.55	.09	.58	.26	.05
9-	2.11	1.39	.30	.95	.14	.89	.59	.07
10-	1.75	1.32	.28	.96	.08	.84	.53	.04
11-	2.97	2.27	.53	1.52	.22	1.31	.86	.11
12-	7.04	5.41	1.21	3.44	.76	3.31	2.12	.34
13-	9.84	7.64	1.73	4.57	1.34	4.63	2.99	.60
14-	8.73	6.73	1.46	4.11	1.16	4.21	2.75	.58
15-	6.35	4.60	1.01	2.76	.83	2.95	1.88	.39
16-	4.04	2.64	.62	1.47	.55	1.79	1.13	.29
17-	.36	.26	.09	.13	.04	.13	.07	.02
Total	43.80	33.57	7.47	20.89	5.21	20.70	13.20	2.59
				January 23				
7-8	.72	1.20	.40	.49	.31	.67	.42	.15
8-	8.12	11.74	1.47	5.74	4.53	8.17	6.71	2.85
9-	24.67	35.29	4.43	17.69	13.17	20.15	15.66	6.11
10-	28.55	31.58	3.26	17.90	10.42	36.33	23.02	9.68
11-	47.14	35.09	7.33	17.27	10.49	71.61	47.94	16.75
12-	51.35	26.69	6.96	12.44	7.29	76.96	53.73	18.02
13-	46.09	12.55	3.78	6.57	2.20	68.74	51.01	16.50
14-	36.65	5.82	2.33	2.78	.71	43.12	34.62	12.32
15-	21.75	4.38	1.75	2.10	.53	21.96	17.41	6.55
16-	8.69	2.65	1.00	1.36	.29	2.52	1.81	.51
17-	.74	.38	.14	.23	.01	.24	.15	.03
Total	274.47	167.37	32.85	84.57	49.95	350.49	252.48	89.47
				January 24				
7-8	1.21	.61	.17	.09	.35	.37	.19	.05
8-	7.82	5.63	.92	3.13	1.58	3.68	2.29	.76
9-	20.31	21.94	3.53	11.18	7.23	11.67	7.63	2.77
10-	15.49	11.75	1.47	7.02	3.26	8.23	4.94	1.55
11-	14.03	10.71	2.36	6.07	2.28	6.79	4.47	1.08
12-	7.69	6.17	1.51	3.66	1.00	3.63	2.36	.46
13-	5.59	3.94	.95	2.44	.55	2.45	1.57	.27
14-	3.93	2.75	.73	1.68	.34	1.70	1.03	.15
15-	7.90	5.54	1.26	3.22	1.06	3.64	2.42	.62
16-	3.33	2.28	.54	1.27	.47	1.39	.93	.25
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	87.10	71.32	13.44	39.76	18.12	43.55	27.83	7.96

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycor	Yellow	Black
				January 25				
7-8	2.22	6.11	,53	2.55	3.03	1.62	1.14	.63
8-	14.61	30.55	3.04	16.24	11.27	14.95	16.05	5.78
9-	25.97	36.43	5.18	19.95	11.30	24.72	17.67	5.78
10-	40.05	39.30	9.81	18.22	11.29	43.43	25.09	9.82
11-	45.12	34.34	7.34	17.78	9.22	64.59	43.96	13.69
12-	38.10	23.49	5.62	12.19	5.68	42.52	28.67	8.79
13-	37.97	17.88	4.77	9.24	3.87	35.32	24.68	7.45
14-	24.18	11.96	3.28	6.12	2.56	19.29	13.69	4.05
15-	19.99	9.71	2.53	5.07	2.11	16.20	11.28	3.52
16-	5.16	3.61	.85	1.96	.80	2.61	1.76	.45
17-	.51	.24	.05	.15	.04	.12	.06	.01
Total	253.88	213.62	43.00	109.45	61.17	265.37	184.05	60.00
				January 26				
7-8	1.26	1.34	.27	.71	.36	.76	.51	.17
8-	10.83	14.96	2.06	8.33	4.57	9.18	7.77	2.46
9-	25.02	34.69	4.95	19.44	10.30	17.85	13.62	4.59
10-	37.17	38.19	7.07	20.52	10.60	42.33	25.44	9.36
11-	44.57	33.97	6.89	17.71	8.97	59.89	38.22	12.19
12-	45.53	24.83	6.22	12.21	6.20	63.50	42.58	13.03
13-	39.45	13.47	4.20	6.51	2.76	43.41	22.66	7.56
14-	29.01	9.60	2.71	4.90	1.99	28.03	19.65	6.13
15-	13.17	7.54	1.84	4.05	1.65	7.35	5.66	1.76
16-	4.93	3.19	.93	1.66	.60	3.28	2.40	.72
17-	.60	.34	.11	.18	.05	.29	.18	.05
Total	251.54	181.52	37.22	96.22	48.05	275.87	178.69	57.82
				January 27				
7-8	.40	.40	.07	.22	.11	.20	.15	.10
8-	1.64	1.42	.19	.92	.31	5.50	3.90	1.25
9-	7.83	7.25	1.60	4.45	1.20	12.65	10.00	3.75
10-	18.93	15.50	3.90	9.10	2.50	24.15	18.25	6.45
11-	26.95	24.62	5.70	13.48	5.44	44.00	26.05	9.60
12-	46.39	25.50	7.09	12.92	5.49	67.90	45.47	14.36
13-	44.66	12.55	4.72	6.28	1.55	64.78	45.98	13.85
14-	33.98	6.73	2.80	3.41	.52	44.45	31.42	10.25
15-	19.68	4.70	1.81	2.49	.40	18.54	15.91	5.34
16-	7.64	2.55	1.00	1.33	.22	2.30	1.56	.44
17-	.73	.19	.05	.12	.02	.12	.07	.01
Total	208.83	101.41	28.93	54.72	17.76	284.59	198.76	65.40

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters.		
		Total	U.V.	Visible	I.R.	Vycee	Yellow	Black
				January 28				
7-8	2.83	5.71	.47	2.41	2.83	2.10	1.74	.71
8-	15.31	28.74	2.87	15.20	10.67	20.43	16.62	5.85
9-	29.19	44.15	5.77	23.67	14.71	26.09	19.79	7.37
10-	42.69	45.89	7.67	24.38	13.84	51.72	31.21	12.90
11-	51.05	38.89	7.88	19.89	11.12	67.86	47.27	15.43
12-	40.25	24.91	5.61	12.75	6.55	42.08	28.61	9.41
13-	33.23	18.00	4.35	9.36	4.29	28.90	19.73	6.54
14-	29.54	13.52	3.65	6.98	2.89	40.24	28.56	9.53
15-	21.93	7.07	2.11	3.61	1.35	21.94	14.93	5.09
16-	9.97	4.07	1.12	2.20	.79	3.86	2.71	.80
17-	1.82	.61	.16	.33	.12	.53	.38	.11
Total	287.81	231.56	41.66	120.78	69.12	305.75	211.55	73.74
				January 29				
7-8	1.67	5.67	.51	2.27	2.89	1.50	1.15	.51
8-	12.31	28.52	2.82	14.53	11.17	16.11	15.89	6.16
9-	29.66	42.56	5.55	22.93	14.08	22.31	17.79	6.69
10-	42.14	43.02	7.26	23.15	13.61	51.07	30.85	12.79
11-	47.96	35.85	7.46	17.78	10.61	69.37	43.81	15.70
12-	52.29	26.31	6.62	12.47	7.22	72.29	47.51	16.47
13-	48.62	14.41	4.70	6.81	2.90	63.96	43.38	14.64
14-	34.87	9.76	2.07	4.89	1.80	39.94	28.32	9.31
15-	16.85	8.84	2.26	4.66	1.92	12.42	8.67	2.74
16-	6.33	4.35	1.64	1.66	1.05	3.20	2.15	.61
17-	.51	.32	.08	.17	.07	.20	.11	.03
Total	293.21	219.61	40.97	111.32	67.32	352.37	239.63	85.65
				January 30, 1946				
7-8	.86	1.20	.25	.80	.15	.06	.02	.00
8-	2.81	3.50	.85	2.25	.40	1.16	.62	.12
9-	2.59	3.10	.75	1.95	.40	1.78	1.21	.15
10-	5.62	5.85	1.22	3.78	.85	1.68	1.12	.19
11-	4.56	4.85	1.02	3.02	.81	2.62	1.74	.25
12-	6.04	5.40	1.25	3.29	.86	3.31	2.12	.31
13-	9.44	7.50	1.65	4.35	1.50	5.60	3.65	.73
14-	5.96	4.20	1.05	2.45	.70	3.25	2.25	.52
15-	2.24	2.00	.60	1.20	.20	2.10	1.65	.39
16-	.76	.66	.20	.41	.05	.70	.50	.10
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	40.78	38.26	8.84	23.50	5.92	22.26	14.88	2.76

Time	Total Radiation Horizontal Surface	Radiation on Surface 45° East				Radiation on Surface 45° South, through Filters		
		Total	U.V.	Visibile	I.R.	Vycor	Yellow	Black
				January 31				
7-8	.04	.25	.05	.20	.00	.00	.00	.00
8-	2.06	1.09	.25	.72	.12	.74	.40	.08
9-	1.22	2.14	.44	1.47	.23	1.64	1.09	.13
10-	2.26	2.65	.47	1.85	.33	1.84	1.24	.18
11-	6.51	2.89	.59	1.90	.40	2.13	1.38	.36
12-	3.83	2.33	.44	1.33	.56	2.84	1.73	.44
13-	3.21	1.84	.39	1.11	.34	2.98	2.01	.45
14-	3.49	1.64	.36	1.05	.23	2.34	1.58	.31
15-	3.21	.55	.20	.26	.09	1.04	.64	.10
16-	.56	.29	.12	.14	.03	.42	.31	.04
17-	.00	.00	.00	.00	.00	.00	.00	.00
Total	26.39	15.67	3.31	10.03	2.33	15.97	10.38	2.09

TABLE II -JANUARY

TOTAL RADIATION ON A HORIZONTAL SURFACE.
CALORIES PER SQUARE CENTIMETER

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Total
Jan. 1	.36	8.59	19.78	30.43	40.53	38.86	28.21	30.42	17.05	5.46	.20	219.89
2	1.17	8.56	21.48	28.06	38.94	42.74	42.24	32.81	19.43	5.78	.20	241.43
3	.61	3.97	8.60	16.83	21.91	28.28	22.34	13.71	7.01	2.10	.00	125.36
4	.41	4.48	11.13	11.27	15.47	26.49	31.06	30.24	10.10	4.29	.41	145.35
5	.79	9.23	22.25	26.87	23.26	39.27	15.70	22.50	10.36	3.61	.00	173.84
6	.30	5.90	7.55	14.66	8.80	9.72	10.64	7.95	4.41	2.47	.35	72.75
7	.71	4.52	11.66	10.20	7.24	2.51	5.29	9.43	3.64	2.83	.00	58.03
8	.83	4.90	8.60	3.96	9.19	6.85	4.84	3.23	3.71	.66	.00	46.77
9	.61	2.74	5.17	9.51	10.65	9.39	9.44	8.15	3.45	1.02	.00	60.13
10	.87	11.04	24.00	35.59	43.18	44.88	40.65	31.02	15.74	5.01	.61	252.59
11	.87	4.80	8.10	11.25	12.32	7.34	6.57	4.63	4.27	2.49	.15	62.79
12	.82	7.79	14.91	15.01	20.46	32.46	31.08	30.72	15.64	6.03	.66	175.58
13	1.67	8.94	30.02	41.62	23.13	23.41	36.31	35.76	22.18	7.99	.61	231.64
14	2.72	11.75	26.64	38.24	46.96	49.07	43.21	35.55	20.14	7.16	.66	282.10
15	.41	2.59	4.67	6.61	7.52	7.04	7.46	5.48	1.63	.41	.00	43.82
16	.36	6.59	20.21	19.72	36.33	29.55	26.38	17.89	7.35	1.14	.00	165.52
17	.00	1.33	4.74	14.51	28.92	46.79	45.63	33.40	20.17	7.09	.51	203.09
18	.51	4.85	12.00	23.09,	43.43	45.34	42.44	32.79	20.48	7.22	.51	232.66
19	.41	4.63	9.35	16.31	35.54	40.87	39.01	30.29	14.85	3.97	.20	195.43
20	.00	1.78	4.77	4.65	4.53	4.27	3.20	3.17	.81	1.30	.00	27.48
21	.81	5.16	10.81	17.41	20.05	19.16	16.26	16.60	12.39	5.25	.96	124.86
22	.20	.41	2.11	1.75	2.97	7.04	9.84	8.73	6.35	4.04	.36	43.80
23	.72	8.12	24.67	28.55	47.14	51.35	46.09	36.65	21.75	8.69	.74	274.47
24	1.21	7.82	20.31	15.49	14.03	7.69	5.39	3.93	7.90	3.33	.00	87.10
25	2.22	14.61	35.97	40.05	45.12	38.10	37.97	24.18	19.99	5.16	.51	253.88
26	1.26	10.83	25.02	37.17	44.57	45.53	39.45	29.01	13.17	4.93	.60	251.54
27	.40	1.64	7.83	18.93	26.95	46.39	44.66	33.98	19.68	7.64	.73	208.83
28	2.83	15.31	29.19	42.69	51.05	40.25	33.23	39.54	21.93	9.97	1.82	287.81
29	1.67	12.31	29.66	42.14	47.96	52.29	48.62	34.87	16.85	6.33	.51	293.21
30	.86	2.81	2.59	5.52	4.56	6.04	9.44	5.96	2.24	.76	.00	40.78
31	.04	2.06	1.22	2.26	6.51	3.83	3.21	3.49	3.21	.56	.00	26.39
Total	26.65	200.06	455.01	630.35	789.22	852.57	785.86	646.08	367.90	133.69	11.30	4898.69
Average per Day	.86	6.45	14.68	20.63	25.46	27.50	25.35	20.84	11.87	4.31	.36	158.02

TABLE II-b

TOTAL RADIATION ON SURFACE 45 °EAST

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Total
Jan. 1	.45	9.77	22.73	27.75	30.22	22.71	13.55	9.06	5.60	2.07	.10	144.01
2	3.09	21.27	33.92	29.92	28.68	19.07	8.55	5.38	3.10	1.20	.60	154.78
3	.30	2.95	7.15	14.36	17.62	19.38	15.54	9.77	4.81	1.25	.00	93.13
4	.78	3.65	9.59	8.55	12.51	18.53	12.91	6.01	5.60	2.26	.08	80.47
5	.96	23.14	35.38	30.62	17.42	22.76	10.30	9.91	6.42	2.20	.05	159.16
6	.26	4.64	6.19	11.60	6.79	7.56	8.73	6.11	3.24	1.47	.01	56.60
7	.35	3.00	9.32	8.17	5.25	3.00	2.00	1.50	1.00	.50	.00	34.09
8	.71	4.49	7.39	2.76	7.25	5.32	3.69	2.40	2.78	.40	.00	37.19
9	.32	1.81	4.92	7.89	8.67	7.22	4.77	3.54	2.78	.38	.00	42.30
10	4.50	28.26	37.46	38.61	32.28	21.25	8.81	4.90	4.52	2.89	.12	183.60
11	.88	4.30	6.64	9.07	9.61	5.83	5.30	3.79	3.16	1.75	..02	50.35
12	.99	10.52	18.43	12.67	14.94	17.94	14.32	9.36	7.33	3.33	.16	109.99
13	2.68	13.63	39.60	40.92	19.43	17.64	12.42	5.38	4.25	2.37	.17	158.49
14	4.32	27.15	41.60	42.33	34.38	23.31	10.56	6.09	4.33	2.49	.13	196.69
15	.33	2.07	3.67	5.23	5.93	5.74	6.33	3.36	1.52	.87	.00	35.05
16	.34	7.50	22.87	18.92	27.34	21.42	17.54	12.71	5.60	.73	.00	134.97
17	.14	1.27	3.77	12.77	24.63	25.56	12.56	6.73	4.72	2.50	.17	94.82
18	.99	4.00	10.30	22.90	33.02	22.86	12.04	5.86	4.26	2.34	.20	118.77
19	.95	3.82	7.80	13.20	26.86	25.97	16.89	10.51	8.77	2.70	.08	117.55
20	.25	1.10	2.15	2.65	2.90	2.35	1.85	1.65	.56	.30	.00	15.76
21	.90	4.58	9.13	13.16	16.04	14.32	11.95	12.95	8.24	3.04	.28	94.59
22	.48	.83	1.39	1.32	2.27	5.41	7.64	6.73	4.60	2.64	.26	33.57
23	1.20	11.74	35.29	31.58	35.09	26.69	12.55	5.82	4.38	2.65	.38	167.37
24	.61	5.63	21.94	11.75	10.71	6.17	3.94	2.75	5.54	2.28	.00	71.32
25	6.11	30.55	36.43	39.30	34.34	23.49	17.88	11.96	9.71	3.61	.24	213.62
26	1.34	14.96	34.69	38.19	33.57	24.63	13.47	9.60	7.54	3.19	.34	181.52
27	.40	1.42	7.25	15.50	24.62	25.50	12.55	6.73	4.70	2.55	.19	101.41
28	5.71	28.74	44.15	45.89	38.89	24.91	18.00	13.52	7.07	4.07	.61	231.56
29	5.67	28.52	42.56	43.02	35.85	26.31	14.41	9.76	8.84	4.35	.32	219.61
30	1.20	3.50	3.10	5.85	4.85	5.40	7.50	4.20	2.00	.66	.00	38.26
31	.25	1.09	2.14	2.65	2.89	2.33	1.84	1.64	.55	.29	.00	15.67
Total	47.46	309.90	568.95	609.10	604.85	500.58	320.39	209.68	147.52	63.33	4.51	3386.27
Average per Day	1.53	10.00	18.35	19.65	19.51	16.15	10.34	6.76	4.76	2.04	.15	109.23

TABLE II-c

U.V. RADIATION ON SURFACE 45° EAST.

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Total
Jan. 1	.05	1.33	2.86	3.79	6.50	4.67	3.60	2.64	1.61	.67	.03	27.75
2	.26	2.17	4.24	4.12	5.71	3.95	2.20	1.52	.91	.37	.21	25.66
3	.04	.68	1.30	2.77	3.36	4.47	3.66	2.12	1.17	.46	.00	20.03
4	.05	.83	2.03	1.78	2.84	4.23	3.59	2.20	1.49	.56	.03	19.63
5	.13	2.51	4.71	5.21	3.78	6.05	2.53	2.68	1.65	.63	.03	29.89
6	.06	1.07	1.70	2.79	1.80	2.03	2.40	1.61	.96	.48	.01	14.91
7	.05	.70	1.87	1.92	1.29	.76	.56	.42	.30	.15	.00	8.02
8	.08	.65	1.39	.74	2.11	1.07	.91	.66	.76	.16	.00	8.53
9	.05	.42	.94	1.87	2.05	1.75	1.15	.84	.76	.15	.00	9.98
10	.34	2.81	5.21	7.16	7.43	6.13	3.12	2.06	1.63	.74	.04	36.67
11	.18	.93	1.45	2.36	2.21	1.39	1.30	.99	.78	.41	.01	12.01
12	.12	1.42	2.25	2.63	3.64	4.67	3.93	2.85	2.05	.84	.05	24.45
13	.31	1.84	5.88	6.58	4.14	3.94	3.47	2.27	1.69	.83	.05	31.00
14	.24	2.70	5.85	7.65	7.58	6.64	3.88	2.34	1.59	.78	.01	39.26
15	.08	.51	.94	1.37	1.54	1.50	1.65	.73	.31	.19	.00	8.92
16	.08	1.35	3.66	3.74	5.94	4.80	4.08	2.94	2.14	.19	.00	28.92
17	.08	.38	1.08	3.33	5.71	7.16	4.72	2.80	1.82	.94	.04	27.96
18	.15	.88	2.24	5.09	6.67	6.12	4.25	2.31	1.65	.89	.05	30.24
19	.12	.89	1.78	2.91	5.43	12.73	5.01	3.04	2.25	.70	.04	34.90
20	.05	.26	.45	.48	,.60	.45	.40	.35	.20	.12	.00	3.36
21	.19	.94	2.01	2.89	3.47	3.11	2.66	2.83	1.86	.73	.10	20.79
22	.05	.19	.30	.28	.53	1.21	1.73	1.46	1.01	.62	.09	7.47
23	.40	1.47	4.43	3.26	7.33	6.96	3.78	2.33	1.75	1.00	.14	32.85
24	.17	.92	3.53	1.47	2.46	1.51	.95	.73	1.26	.54	.00	13.44
25	.53	3.04	5.18	9.81	7.34	5.62	4.77	3.28	2.53	.85	.05	43.00
26	.27	2.06	4.95	7.07	6.89	6.22	4.20	2.71	1.84	.93	.11	37.22
27	.07	.19	1.60	3.90	5.70	7.09	4.72	2.80	1.81	1.00	.05	28.93
28	.47	2.87	5.77	7.67	7.88	5.61	4.35	3.65	2.11	1.12	.16	41.66
29	.51	2.82	5.55	7.26	7.46	6.62	4.70	2.07	2.26	1.64	.08	40.97
30	.25	.85	.75	1.22	1.02	1.25	1.65	1.05	.60	.20	.00	8.84
31	.05	.25	.44	.47	.59	.44	.39	.36	.20	.12	.00	3.31
Total	5.48	39.93	86.34	113.49	130.90	130.15	90.31	60.64	42.95	19.01	1.38	720.57
Average per Day	.18	1.29	2.79	3.66	4.22	4.20	2.91	1.96	1.39	.61	.04	23.24

TABLE II-d

Visible Radiation on Surface 45° East

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Sum for day
Jan. 1	.16	4.52	10.99	13.50	13.46	10.82	6.17	4.22	2.65	.98	.06	67.48
2	1.25	10.85	20.50	16.98	15.29	9.05	4.00	2.35	1.39	.63	.36	82.65
3	.19	1.46	3.92	8.24	10.01	10.52	8.08	5.31	2.72	.63	.00	51.08
4	.38	1.81	4.88	4.59	6.52	9.18	6.11	2.90	2.77	1.14	.04	40.32
5	.44	11.17	18.33	15.68	9.02	10.55	5.35	4.93	3.24	1.10	.02	79.83
6	.11	2.75	3.37	6.76	4.16	4.57	5.16	3.55	1.83	.74	.00	33.00
7	.23	1.90	6.50	5.20	3.49	1.92	1.24	.93	.61	.30	.00	22.32
8	.48	2.85	4.39	1.67	3.99	3.49	2.30	1.49	1.63	.19	.00	22.48
9	.21	1.14	3.50	5.02	5.52	4.62	3.00	2.25	1.63	.18	.00	27.07
10	1.61	16.37	21.50	21.08	16.65	10.12	4.17	2.39	2.33	1.61	.08	97.91
11	.46	2.41	3.90	5.02	5.60	3.58	3.20	2.32	1.90	1.01	.01	29.51
12	.51	4.82	9.71	6.77	7.22	8.37	6.91	4.59	3.47	1.71	.09	54.17
13	1.30	7.31	21.61	22.63	10.57	9.64	6.40	2.52	2.10	1.29	.12	85.49
14	2.19	14.51	22.54	22.28	17.26	10.80	4.87	2.97	2.25	1.43	.11	101.21
15	.20	1.28	2.29	3.26	3.73	3.60	3.92	2.05	.93	.50	.00	21.76
16	.19	4.06	12.67	10.33	14.34	11.66	9.64	7.10	2.41	.47	.00	72.87
17	.06	.82	2.33	7.36	13.49	12.92	6.28	3.42	2.50	1.34	.12	50.64
18	.44	2.27	5.81	12.61	17.35	11.33	5.87	2.01	2.22	1.29	.14	61.34
19	.44	2.12	4.40	7.42	14.59	7.38	8.53	5.55	4.65	1.42	.04	56.54
20	.20	.72	1.47	1.83	1.90	1.35	1.10	.95	.26	.16	.00	9.94
21	.45	2.59	5.13	7.55	9.22	8.33	6.88	7.25	4.58	1.72	.13	53.83
22	.43	.55	.95	.96	1.52	3.44	4.57	4.11	2.76	1.47	.13	20.89
23	.49	5.74	17.69	17.90	17.27	12.44	6.57	2.87	2.10	1.36	.23	84.57
24	.09	3.13	11.18	7.02	6.07	3.66	2.44	1.68	3.22	1.27	.00	39.76
25	2.55	16.24	19.95	18.20	17.78	12.19	9.24	6.12	5.07	1.96	.15	109.45
26	.71	8.33	19.44	20.52	17.71	12.21	6.51	4.90	4.05	1.66	.18	96.22
27	.22	.92	4.45	9.10	13.48	12.92	6.28	3.41	2.49	1.33	.12	54.72
28	2.41	15.20	23.67	24.38	19.89	12.75	9.36	6.98	3.61	2.20	.33	120.78
29	2.27	14.53	22.93	23.15	17.78	12.47	6.81	4.89	4.66	1.66	.17	111.32
30	.80	2.25	1.95	3.78	3.02	3.29	4.35	2.45	1.20	.41	.00	23.50
31	.20	.72	1.47	1.85	1.90	1.33	1.11	1.05	.26	.14	.00	10.03
Total	21.67	165.34	313.42	332.64	319.80	250.50	166.42	109.51	77.49	33.30	2.63	1792.68
Average per day	.70	5.33	10.11	10.73	10.32	8.08	5.37	3.53	2.50	1.07	.08	57.83

TABLE II-e

I.R. Radiation on Surface 45° East.

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Sum for day
Jan. 1	.24	3.92	8.88	10.46	10.26	7.22	3.83	2.20	1.34	.42	.01	48.78
2	1.58	8.25	9.18	8.32	7.68	6.07	2.35	1.51	.80	.20	.03	46.47
3	.07	.81	1.93	3.35	4.25	4.39	3.80	2.34	.92	.16	.00	22.02
4	.35	1.01	2.68	2.18	3.15	5.12	3.21	.91	1.34	.56	.01	20.52
5	.39	9.46	12.34	9.73	4.62	6.16	2.42	2.32	1.53	.47	.00	49.44
6	.09	.82	1.12	2.05	.83	.96	1.17	.95	.45	.25	.00	8.69
7	.07	.40	.95	1.05	.47	.32	.20	.15	.09	.05	.00	3.75
8	.15	.99	1.61	.35	1.15	.76	.48	.25	.39	.05	.00	6.18
9	.06	.25	.48	1.00	1.10	.85	.62	.45	.39	.05	.00	5.25
10	2.55	9.08	10.75	10.37	8.20	5.00	1.42	.45	.56	.54	.00	48.92
11	.24	.96	1.29	1.69	1.80	.86	.80	.48	.48	.33	.00	8.93
12	.36	4.28	6.47	3.27	4.08	4.90	3.48	1.92	1.81	.78	.02	31.37
13	1.07	4.48	12.11	11.71	4.72	4.06	2.55	.59	.46	.25	.00	42.00
14	1.89	9.94	13.21	12.40	9.54	5.87	1.81	.78	.49	.28	.01	56.22
15	.05	.28	.44	.60	.66	.64	.76	.58	.28	.18	.00	4.47
16	.07	2.09	6.54	4.85	7.06	4.96	3.82	2.67	1.05	.07	.00	33.18
17	.00	.07	.36	2.18	5.43	5.48	1.56	.51	.40	.22	.01	16.22
18	.40	.85	2.25	6.20	9.00	5.41	1.92	.54	.39	.22	.01	27.19
19	.39	.81	1.62	2.87	6.84	5.86	3.35	1.92	1.37	.58	.00	26.11
20	.00	.12	.23	.34	.40	.55	.35	.35	.10	.02	.00	2.46
21	.26	1.05	1.09	2.72	3.35	2.88	2.41	2.87	1.80	.59	.05	19.97
22	.00	.09	.14	.08	.22	.76	1.34	1.16	.83	.55	.04	5.21
23	.31	4.55	13.17	10.42	10.49	7.20	2.20	.71	.53	.29	.01	49.95
24	.35	1.58	7.23	3.26	2.28	1.00	.55	.34	1.06	.47	.00	18.12
25	3.03	11.27	11.30	11.39	9.22	5.68	3.87	2.56	2.11	.80	.04	61.17
26	.36	4.57	10.30	10.30	8.99	6.20	2.76	1.99	1.65	.60	.05	48.07
27	.11	.31	1.30	2.30	5.44	5.49	1.55	.52	.40	.22	.02	17.76
28	2.33	10.37	14.01	13.34	11.12	6.55	4.29	2.89	1.35	.75	.12	69.12
29	2.89	11.17	14.08	13.01	10.61	7.22	2.90	1.80	1.92	1.05	.07	67.32
30	.15	.40	.40	.35	.81	.83	1.50	.70	.20	.05	.00	5.92
31	.00	.12	.23	.33	.40	.56	.34	.23	.09	.03	.00	2.33
Sum	20.31	104.63	169.19	164.97	154.17	119.93	63.61	37.64	27.08	11.08	.50	873.11
Average per day	.66	3.38	5.46	5.32	4.97	3.87	2.05	1.21	.87	.36	.02	28.16

TABLE II-f

RADIATION ON SURFACE 45° SOUTH THROUGH VYCOR GLASS.

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Total
Jan. 1	.35	5.22	14.72	32.00	60.00	45.50	32.00	42.00	20.00	2.21	.10	254.10
2	1.50	6.11	14.18	48.20	66.50	67.85	64.25	47.50	17.25	1.87	.00	335.21
3	.21	1.96	4.61	14.81	22.49	24.52	16.60	9.91	3.59	.89	.00	99.59
4	.48	2.32	6.50	5.67	8.49	19.95	38.35	43.56	7.41	1.96	.06	134.75
5	.52	6.87	13.97	29.86	14.68	59.57	8.07	19.47	6.91	1.92	.05	161.89
6	.14	3.00	3.76	7.88	4.00	4.25	5.02	3.89	1.87	.95	.00	34.76
7	.24	1.77	6.07	5.11	3.33	2.58	3.03	2.28	1.84	1.05	.01	27.31
8	.43	2.94	5.25	1.68	4.52	3.50	2.23	1.54	1.73	.23	.00	24.05
9	.23	1.40	2.39	5.01	6.06	5.65	5.72	5.48	2.62	.78	.00	35.34
10	1.05	11.15	14.85	48.95	67.20	71.15	57.40	39.65	15.65	2.65	.09	329.79
11	.55	2.69	3.79	7.53	6.66	3.65	3.03	2.25	1.85	1.07	.01	33.08
12	.72	4.59	11.83	13.97	29.80	38.15	43.01	28.40	8.70	3.87	.14	183.18
13	.75	12.00	20.00	45.45	17.94	13.21	38.45	47.87	20.17	2.53	.12	218.49
14	1.86	15.30	18.34	56.57	76.83	79.36	61.28	44.52	18.57	2.63	.10	375.36
15	.17	1.27	2.17	3.11	3.62	3.86	4.02	3.64	1.39	.68	.00	23.93
16	.36	2.85	11.80	14.50	29.70	27.20	22.45	16.05	8.80	3.87	.05	137.63
17	.20	4.75	8.24	16.85	42.33	67.91	64.78	44.46	18.54	2.30	.12	270.48
18	.50	2.46	7.18	29.31	71.00	66.08	58.31	42.99	18.43	2.22	.13	298.61
19	.40	2.29	5.09	9.36	34.25	46.93	45.17	28.32	10.12	2.09	.01	184.03
20	.00	.75	1.65	1.85	2.15	2.85	3.00	2.35	1.05	.42	.00	16.07
21	.50	2.79	6.46	9.04	10.58	9.75	7.82	10.82	7.25	2.22	.20	67.43
22	.06	.58	.89	.84	1.31	3.31	4.63	4.21	2.95	1.79	.13	20.70
23	.67	8.17	20.15	36.33	71.61	76.96	68.74	43,12	21.96	2.52	.24	350.49
24	.37	3.68	11.67	8.23	6.79	3.63	2.45	1.70	3.64	1.39	.00	43.55
25	1.62	14.95	24.72	43.43	64.59	42.62	35.32	19.29	16.20	2.61	.12	265.37
26	.76	9.18	17.85	42.33	59.89	63.50	43.41	28.03	7.35	3.28	.29	275.87
27	.20	5.50	12.65	24.15	44.00	67.90	64.78	44.45	18.54	2.30	.12	284.59
28	2.10	20.43	26.09	51.72	67.86	42.08	28.90	40.24	21.94	3.86	.53	305.75
29	1.50	16.11	22.31	51.07	69.37	72.29	63.96	39.94	12.42	3.20	.20	352.37
30	.06	1.16	1.78	1.68	2.62	3.31	5.60	3.25	2.10	.70	.00	22.26
31	.00	.74	1.64	1.84	2.13	2.84	2.98	2.34	1.04	.42	.00	15.97
Total	18.50	174.98	322.60	668.33	972.30	1041.81	904.76	713.52	301.88	60.48	2.82	5182.00
Average per Day	.60	5.65	10.41	21.56	31.36	33.61	29.19	23.02	9.74	1.95	.09	167.16

TABLE II-g

RADIATION ON SURFACE 45° SOUTH THROUGH YELLOW GLASS.

Date 1946	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Total
Jan. 1	.30	3.95	11.34	24.75	43.80	30.85	22.20	31.30	13.88	1.49	.08	183.94
2	.80	7.66	9.46	32.45	45.48	46.75	43.15	36.10	14.53	1.20	.00	237.58
3	.15	1.24	2.94	9.09	14.14	15.80	10.86	6.50	2.27	.52	.00	63.51
4	.28	1.47	4.12	3.55	5.42	13.26	25.95	28.75	5.26	1.28	.03	89.37
5	.36	8.16	11.46	18.19	9.48	38.66	6.01	12.93	4.65	1.25	.02	111.17
6	.09	1.80	3.00	5.70	3.10	3.25	4.38	3.00	1.35	.65	.00	26.12
7	.11	1.24	4.27	3.57	2.15	1.64	2.05	1.54	1.38	.68	.00	18.63
8	.30	2.06	3.73	1.13	3.10	2.36	1.57	.95	1.15	.10	.00	16.45
9	.10	.91	1.55	3.40	4.05	3.85	3.92	3.72	1.85	.55	.00	23.93
10	.75	10.48	12.88	32.35	46.05	47.12	41.70	31.80	14.32	1.95	.02	239.42
11	.39	1.89	2.68	5.32	4.55	2.49	2.05	1.53	1.36	.70	.00	22.96
12	.50	4.15	10.31	11.46	18.18	25.90	28.10	17.25	7.16	2.20	.07	125.28
13.	.50	7.17	14.94	31.84	12.64	9.46	30.47	36.78	18.75	1.75	.05	164.35
14	1.36	14.77	15.96	37.43	52.26	52.51	46.43	35.69	17.85	1.92	.03	276.21
15	.11	.83	1.41	2.26	2.41	2.60	2.85	2.42	.93	.44	.00	16.26
16	.25	2.05	9.31	11.20	18.05	17.00	15.90	12.10	7.16	2.20	.03	95.25
17	.15	3.10	7.00	12.62	25.44	45.48	45.99	31.42	15.91	1.57	.07	188.75
18	.34	1.65	4.82	20.31	46.55	45.57	41.24	30.27	16.22	1.59	.10	208.66
19	.25	1.45	3.26	6.13	20.62	29.86	32.44	21.80,	7.53	1.33	.00	124.67
20	.00	.40	1.10	1.25	1.40	1.75	2.02	1.60	.65	.32	.00	10.49
21	.35	1.85	4.24	5.86	6.85	6.35	5.10	7.14	5.05	1.43	.13	44.35
22	.02	.26	.59	.53	.86	2.12	2.99	2.75	1.88	1.13	.07	13.20
23	.42	6.71	15.66	23.02	47.94	53.73	51.01	34.62	17.41	,1.81	.15	252.48
24	.19	2.29	7.63	4.94	4.47	2.36	1.57	1.03	2.42	.93	.00	27.83
25	1.14	16.05	17.67	25.09	43.96	28.67	24.68	13.69	11.28	1.76	.06	184.05
26	.51	7.77	13.62	25.44	38.22	42.58	22.66	19.65	5.66	2.40	.18	178.69
27	.15	3.90	10.00	18.25	26.05	45.47	45.98	31.42	15.91	1.56	.07	198.76
28	1.74	16.62	19.79	31.21	47.27	28.61	19.73	28.56	14.93	2.71	.38	211.55
29	1.15	15.89	17.79	30.85	43.81	47.51	43.38	28.32	8.67	2.15	.11	239.63
30	.02	.62	1.21	1.12	1.74	2.12	3.65	2.25	1.65	.50	.00	14.88
31	.00	.40	1.09	1.24	1.38	1.73	2.01	1.58	.64	.31	.00	10.38
Total	12.78	148.79	244.83	441.55	641.42	697.41	631.84	518.46	239.66	40.38	1.65	3618.80
Average per Day	.41	4.80	7.90	14.24	20.69	22.50	20.38	16.72	7.73	1.30	.05	116.73

TABLE II-h

Radiation on Surface 45° South through Black Glass

1946 Date	7-8	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	Sum for day
Jan. 1	.10	1.30	3.63	8.26	14.58	10.29	7.43	10.45	4.84	.45	.00	61.33
2	.67	3.12	3.89	11.95	15.16	15.51	14.72	11.69	5.44	.35	.00	82.50
3	.06	.35	.76	2.83	4.26	4.99	3.15	1.87	.56	.10	.00	18.93
4	.15	.42	1.19	.91	1.44	3.74	8.33	9.75	1.65	.35	.00	27.93
5	.12	2.81	3.59	6.85	2.57	11.41	1.55	3.86	1.26	.34	.00	34.36
6	.03	.45	.59	1.14	.42	.44	.56	.48	.18	.11	.00	4.40
7	.03	.24	.92	.63	.33	.24	.34	.24	.20	.15	.00	3.32
8	.07	.46	.43	.15	.53	.38	.21	.11	.19	.01	.00	2.54
9	.03	.13	.21	.57	.85	.79	.81	.76	.31	.12	.00	4.58
10	.30	3.14	3.64	11.38	14.14	14.22	12.77	9.84	4.57	.57	.00	74.57
11	.11	.47	.56	1.18	1.02	.40	.34	.24	.21	.16	.00	4.69
12	.20	1.18	2.79	3.59	6.85	8.32	9.50	6.50	2.28	.59	.02	41.82
13	.18	2.30	4.26	10.13	3.39	2.40	8.75	11.48	6.06	.51	.00	49.46
14	.52	4.43	4.51	13.16	16.09	15.88	13.63	11.07	5.69	.55	.00	85.53
15	.02	.12	.19	.27	.30	.32	.46	.36	.25	.12	.00	2.41
16	.10	.60	2.51	3.40	6.80	6.20	5.80	4.15	2.28	.59	.01	32.44
17	.10	1.00	2.18	4.00	9.30	14.38	13.88	10.27	5.36	.45	.01	60.93
18	.15	.54	1.30	6.73	15.07	14.51	13.08	9.80	5.51	.41	.01	67.11
19	.20	.39	.82	1.65	7.32	9.56	10.10	6.93	2.24	.35	.00	39.56
20	.00	.08	.13	.27	.35	.45	.45	.30	.10	.05	.00	2.13
21	.25	.52	1.13	1.45	1.70	1.54	1.25	1.89	1.40	.36	.03	11.52
22	.00	.05	.07	.04	.11	.34	.60	.58	.39	.29	.02	2.49
23	.15	2.85	6.11	9.68	16.75	18.02	16.50	12.32	6.55	.51	.03	89.47
24	.05	.76	2.77	1.55	1.08	.46	.27	.15	.62	.25	.00	7.96
25	.63	5.78	5.78	9.82	13.69	8.79	7.45	4.05	3.52	.45	.01	59.97
26	.17	2.46	4.59	9.36	12.19	13.03	7.36	6.13	1.76	.72	.05	57.82
27	.10	1.25	3.75	6.45	9.60	14.36	13.85	10.25	5.34	.44	.01	65.40
28	.71	5.85	7.37	12.90	15.43	9.41	6.54	9.53	5.09	.80	.11	73.74
29	.51	6.16	6.69	12.79	15.70	16.47	14.64	9.31	2.74	.61	.03	85.65
30	.00	.12	.15	.19	.25	.31	.73	.52	.39	.10	.00	2.76
31	.00	.08	.13	.18	.36	.44	.45	.31	.10	.04	.00	2.09
Total	5.71	49.41	76.64	153.46	207.63	217.61	195.50	165.18	77.08	10.90	.34	1159.46
Average per day	.18	1.59	2.47	4.95	6.70	7.02	6.31	5.33	2.48	.35	.01	37.40

TABLE II-a - FEB.

Total Radiation on a Horizontal Surface

Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1		2.08	14.71	30.94	44.24	52.22	54.90	50.60	41.82	27.14	12.50	1.81		332.96
2		2.84	14.97	29.59	42.13	52.53	57.87	52.79	44.07	29.56	13.12	1.93		341.40
3		2.21	12.91	28.73	41.00	49.75	52.53	47.39	35.21	23.40	9.50	1.00		303.63
4		2.35	13.01	30.19	42.51	40.67	41.28	27.22	24.26	14.16	6.96	1.28		244.39
5		.73	3.18	6.06	9.05	10.14	9.36	10.18	6.05	3.83	.74	.00		59.32
6		.73	6.25	10.17	17.05	22.07	21.27	14.80	13.51	11.65	7.68	.93		126.11
7		3.57	17.42	34.70	48.99	57.56	59.48	56.27	45.22	30.95	14.57	2.33		370.86
8		4.01	19.85	32.89	46.41	54.38	57.51	51.85	45.22	29.56	12.23	1.22		355.13
9		.51	4.15	5.87	10.25	13.24	16.63	8.57	7.29	3.47	2.72	.20		72.90
10		.00	1.02	2.05	3.11	4.13	6.95	6.28	3.41	2.63	1.44	.00		31.00
11		3.38	17.51	34.28	48.68	54.61	56.15	48.16	42.34	31.29	13.58	3.01		352.99
12		4.27	17.00	29.05	44.55	51.99	57.03	53.63	44.34	30.69	14.76	2.48		349.84
13		.51	6.79	7.66	19.95	28.32	25.51	26.59	18.45	13.69	7.53	1.24		156.24
14		3.20	6.44	8.49	5.51	3.30	3.01	7.32	11.94	8.90	13.66	2.68		74.45
15		5.26	21.01	39.09	53.61	62.36	64.67	60.47	50.68	35.57	18.11	3.52		414.35
16		4.80	19.97	37.49	51.82	59.28	62.31	59.45	48.55	33.83	16.93	1.64		396.07
17		4.41	19.39	36.57	49.74	58.05	62.09	59.05	49.39	32.04	16.11	3.51		390.35
18		4.19	19.19	37.87	52.71	60.22	61.39	54.26	43.18	30.96	16.40	1.48		381.85
19		2.85	3.80	9.20	7.66	7.00	13.51	9.20	5.44	4.02	1.22	.00		63.90
20		5.66	20.72	32.71	37.27	58.42	44.89	33.65	27.82	26.83	18.46	3.79	.02	310.22
21		3.66	21.70	39.64	53.74	62.51	64.10	46.82	33.93	26.23	15.43	2.93		370.79
22		1.00	9.33	23.79	47.07	56.57	58.61	43.28	40.39	34.81	17.28	4.57		336.70
23		2.89	13.97	23.75	44.67	46.73	38.80	31.74	23.10	20.22	11.00	3.29		260.19
24		.51	3.57	7.07	6.62	2.46	2.48	2.54	2.49	2.84	4.57	1.97		37.12
25		6.39	23.39	41.72	56.35	64.60	67.88	64.36	54.87	39.80	22.85	6.37		448.58
26	.03	8.69	20.11	40.53	54.30	61.16	62.49	55.01	49.93	36.22	18.77	5.76		413.35
27		4.55	19.70	40.81	51.08	53.14	48.42	47.30	17.61	8.04	3.44	1.55		295.64
28		1.86	8.95	9.84	9.59	21.79	24.54	34.84	22.41	7.76	4.41	.51		146.50
Total	.03	87.41	380.01	710.51	1000.16	1169.25	1195.66	1063.65	852.97	600.14	315.97	61.05	.02	7436.83
Average per day		3.12	13.57	25.38	35.72	41.76	42.70	37.99	30.46	21.43	11.28	2.18		265.60

TABLE II-b - FEB.

Total Radiation on Surface 45° East

Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	8.28	34.21	45.84	47.08	40.45	28.94	14.74	6.08	4.77	3.15	.60		234.14
2	.00	7.65	33.03	43.04	43.40	39.30	28.40	15.07	6.41	5.14	3.41	.63		225.48
3	.00	4.74	28.32	41.42	42.80	37.63	27.05	14.36	6.88	5.06	3.02	.49		211.77
4	.00	5.33	22.10	43.55	44.10	31.82	23.48	17.38	9.55	5.86	3.77	.62		207.56
5	.00	.45	2.05	4.85	7.20	8.05	7.80	6.90	5.00	2.75	.85	.03		45.93
6	.00	.55	4.00	7.98	14.50	17.50	16.65	11.77	10.67	8.46	4.46	.51		97.05
7	.00	11.92	41.06	51.64	51.41	44.01	31.65	17.31	6.23	4.48	3.50	.92		264.13
8	.00	7.20	34.87	48.50	49.38	42.45	31.51	17.45	6.82	5.20	3.90	.86		248.14
9	.00	.64	3.12	4.66	8.06	10.76	13.80	6.93	5.78	2.44	1.67	.35		58.21
10	.00	.15	.68	1.60	2.40	2.75	2.60	2.25	1.65	.90	.28	.00		15.26
11	.00	8.95	31.81	46.25	47.04	37.51	27.01	15.93	6.96	5.71	4.09	1.03		232.29
12	.00	6.04	26.06	38.54	44.34	40.05	30.80	17.61	6.94	5.22	3.61	.89		219.90
13	.00	.76	5.38	6.32	16.27	21.77	22.39	15.65	12.63	9.48	5.27	1.15		117.07
14	.00	2.60	7.26	6.17	4.44	3.20	1.80	3.65	2.60	1.80	1.25	.25		35.02
15	.03	16.05	44.98	56.30	56.50	49.11	36.08	20.15	7.04	5.25	3.94	1.40		296.83
16	.03	14.73	40.68	51.23	52.78	45.46	34.36	19.90	7.24	5.19	3.81	1.12		276.53
17	.00	12.70	40.22	50.65	51.65	45.64	35.18	20.49	7.60	5.28	3.95	1.37		274.93
18	.00	7.67	32.33	51.95	53.03	47.05	34.16	19.18	7.72	5.48	3.79	.98		263.34
19	.00	1.93	2.69	7.35	6.21	7.00	11.90	7.50	4.50	3.75	.85	.60		54.28
20	.04	14.42	40.58	49.03	55.36	42.61	24.63	19.84	14.49	9.27	5.66	1.51		257.64
21	.03	4.74	45.74	56.28	55.47	49.51	36.72	22.13	19.73	13.88	6.64	1.71		312.63
22	.00	.83	8.45	23.87	52.80	47.67	35.09	22.69	13.70	7.09	4.51	1.58		218.28
23	.04	2.32	18.98	23.10	44.34	39.06	27.07	19.35	15.14	11.70	6.28	1.38		208.76
24	.00	.39	2.45	5.29	4.83	1.01	1.65	2.15	2.10	2.20	2.18	1.10		25.55
25	.07	15.10	46.78	57.37	58.76	52.06	39.69	23.58	7.88	4.78	3.84	1.78		311.69
26	.25	22.74	45.11	56.01	56.29	48.17	36.92	23.62	10.30	5.74	4.70	2.56		312.41
27	.19	8.65	34.60	53.23	53.02	46.50	27.42	25.83	12.72	6.10	2.35	1.35		272.16
28	.00	1.39	6.70	7.44	7.35	17.59	19.18	21.47	15.68	6.12	3.22	.95		107.09
Total	.68	189.12	684.24	939.26	1010.81	915.89	694.33	444.88	240.09	159.10	97.95	27.72		5404.07
Average per day	.02	6.75	24.44	33.54	36.10	32.71	24.80	15.89	8.58	5.68	3.50	.99		193.00

TABLE II-c - FEB.

U.V. Radiation on a Surface 45° East
Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	.80	3.74	6.46	8.42	8.66	7.49	5.06	2.60	1.89	1.16	.18		46.46
2	.00	.73	3.32	6.07	7.52	7.95	7.38	5.11	2.69	2.01	1.26	.16		44.20
3	.00	.63	5.14	5.54	7.04	7.75	6.87	4.71	2.46	1.67	.97	.18		42.96
4	.00	.59	2.59	5.78	7.49	6.15	5.61	4.06	2.73	1.72	.92	.13		37.77
5	.00	.13	.48	1.24	1.79	1.98	1.93	1.59	1.24	.78	.22	.01		11.39
6	.00	.15	.87	1.91	3.37	4.12	3.98	2.86	3.16	1.81	.74	.02		22.99
7	.00	1.03	4.84	7.46	9.14	9.34	8.21	6.04	2.71	1.54	1.31	.31		51.93
8	.00	1.26	3.79	6.56	8.38	9.21	7.74	5.90	2.71	2.07	1.35	.26		49.23
9	.00	.19	.73	1.19	2.01	2.65	3.42	1.81	1.44	.69	.43	.10		14.66
10	.00	.04	.16	.41	.60	.66	.64	.53	.41	.29	.07	.00		3.81
11	.00	1.28	4.06	6.73	6.93	7.54	7.01	4.94	2.50	1.98	1.30	.29		44.56
12	.00	.76	1.52	5.07	7.50	8.01	7.69	5.83	2.69	2.03	1.36	.15		42.61
13	.00	.17	1.24	1.54	3.66	4.99	5.42	4.09	3.15	2.49	1.29	.31		28.35
14	.00	.53	1.19	1.64	1.25	.90	.80	1.23	.85	.40	.25	.05		8.89
15	.01	1.39	4.97	7.83	9.72	9.98	8.96	6.68	2.82	2.14	1.53	.49		56.52
16	.00	3.68	4.90	7.53	9.28	9.39	8.68	6.61	3.00	2.20	1.48	.40		57.15
17	.00	1.12	4.64	6.51	8.88	9.32	8.61	6.68	3.02	2.09	1.44	.44		52.75
18	.00	.95	3.66	7.18	8.88	9.55	8.15	6.03	2.64	1.90	1.52	.42		50.88
19	.00	.44	.68	2.00	1.63	1.90	2.55	1.90	1.05	.95	.22	.16		13.48
20	.01	1.30	3.68	6.85	6.44	9.00	5.96	4.90	3.51	2.63	1.58	.53		46.39
21	.00	.76	5.27	8.48	9.06	10.09	9.15	6.16	4.90	3.13	1.55	.42		58.97
22	.00	.10	1.69	3.76	8.49	9.19	8.14	5.72	4.03	2.71	1.49	.49		45.81
23	.00	.56	2.70	4.01	7.48	7.52	6.05	4.67	3.50	1.81	1.64	.47		40.41
24	.00	.17	.61	1.16	2.25	.21	.47	.60	.58	.55	.53	.25		7.38
25	.02	1.65	5.16	7.99	10.10	10.59	9.87	7.79	3.14	1.96	1.49	.62		60.38
26	.06	3.45	6.04	8.09	9.54	9.78	6.63	6.93	3.95	2.39	1.74	1.08		59.66
27	.04	1.24	4.87	8.21	9.63	9.84	6.70	6.97	3.24	2.50	.80	.40		54.44
28	.00	.34	1.54	1.73	1.83	4.14	4.53	5.40	3.77	1.48	.78	.24		25.78
Total	.14	25.44	84.08	138.93	178.31	190.39	168.44	130.80	74.49	49.81	30.42	8.56		1079.61
Average per day	.00	.91	3.00	4.96	6.37	6.80	6.02	4.67	2.66	1.78	1.09	.31		38.56

TABLE II-d - FEB.

Visible Radiation on Surface 45° East
Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	3.62	27.73	24.19	24.14	20.08	13.68	6.63	2.79	2.32	1.63	.35		127.16
2	.00	3.43	17.63	23.01	22.50	19.84	13.37	6.82	2.92	2.49	1.72	.39		114.32
3	.00	2.19	13.85	22.28	22.58	19.02	12.92	6.69	3.48	2.68	1.63	.25		107.57
4	.00	2.28	11.30	23.29	22.86	16.21	11.62	8.90	4.83	3.02	1.99	.34		106.64
5	.00	.27	1.22	2.94	4.38	4.87	4.64	4.25	3.18	1.71	.52	.02		28.00
6	.00	.30	2.31	4.56	8.07	9.96	9.63	7.02	5.91	5.01	2.74	.36		55.87
7	.00	5.91	22.26	27.88	26.84	22.16	14.92	7.56	2.82	2.38	1.81	.55		135.09
8	.00	2.37	18.22	26.06	25.71	20.74	15.10	7.61	3.35	2.44	2.03	.47		124.10
9	.00	.38	1.85	2.83	4.90	6.51	8.21	4.27	3.67	1.52	1.03	.23		35.40
10	.00	.09	.41	.98	1.46	1.62	1.55	1.42	1.06	.53	.17	.00		9.29
11	.00	4.65	15.92	25.65	25.32	18.62	12.99	7.39	3.57	2.85	2.11	.60		119.67
12	.00	2.83	13.98	19.56	22.77	20.18	15.12	8.11	3.48	2.57	1.65	.64		111.09
13	.00	.45	3.19	3.82	8.91	12.18	11.92	8.37	6.99	5.22	3.02	.66		64.73
14	.00	1.49	4.43	5.63	2.71	1.90	1.00	2.05	1.50	1.25	.90	.20		21.06
15	.02	7.80	23.62	29.35	28.59	24.38	17.11	8.80	3.35	2.46	1.95	.77		148.20
16	.03	4.97	22.30	27.94	28.14	23.46	16.86	8.91	3.43	2.43	1.96	.64		141.07
17	.00	6.21	22.27	28.54	27.53	23.57	17.21	9.11	3.71	2.59	2.02	.79		143.55
18	.00	2.78	25.91	27.91	27.98	23.99	16.63	8.41	3.94	2.79	1.79	.51		142.64
19	.00	1.15	1.41	4.00	3.50	3.90	7.50	4.55	2.85	2.45	.54	.40		32.25
20	.03	6.31	20.41	26.19	19.18	21.56	12.67	10.39	7.74	4.70	2.89	.81		132.89
21	.03	2.35	24.29	29.72	29.23	25.18	17.46	10.76	10.32	6.92	3.59	1.00		160.85
22	.00	.60	4.66	13.35	28.75	24.99	17.51	11.43	6.87	3.40	2.44	.92		114.92
23	.03	1.15	9.82	12.71	23.37	20.49	13.69	10.04	8.19	6.28	3.31	.77		109.85
24	.00	.20	1.34	2.96	1.66	.68	1.20	1.35	1.37	1.55	1.55	.80		14.66
25	.03	9.29	23.57	29.90	29.74	25.83	18.91	10.43	3.82	2.23	1.90	.98		156.63
26	.07	10.52	24.77	31.11	30.54	25.22	20.59	21.18	4.84	2.72	2.39	1.13		175.13
27	.10	4.84	19.65	30.32	29.13	24.98	14.54	13.15	7.23	3.05	1.35	.35		149.29
28	.00	.79	3.71	4.33	4.38	10.09	11.02	11.51	8.64	3.70	1.95	.59		60.71
Total	.34	89.22	382.23	509.01	534.95	472.21	349.57	227.11	125.90	83.26	52.78	16.07		2842.63
Average per day	.01	3.19	13.65	18.18	19.10	16.86	12.48	8.11	4.50	2.97	1.88	.57		101.52

TABLE II-e - FEB.

I.R. Radiation on Surface 45° East

Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	3.86	12.74	15.19	14.52	11.71	7.77	5.05	.69	.56	.36	.07		70.52
2	.00	3.49	11.88	15.96	15.88	11.51	7.65	5.14	.80	.64	.43	.08		67.46
3	.00	1.92	9.33	13.60	13.18	10.86	7.26	2.96	.94	.71	.42	.06		61.24
4	.00	2.46	8.21	14.48	15.75	9.46	6.25	4.42	1.99	1.12	.86	.15		65.15
5	.00	.05	.35	.67	1.05	1.20	1.23	1.06	.58	.26	.11	.00		6.54
6	.00	.10	.82	1.51	3.06	3.42	3.04	1.89	1.60	1.64	.98	.15		18.19
7	.00	4.98	13.96	16.30	15.43	12.51	8.52	3.71	.70	.56	.35	.06		77.08
8	.00	3.57	12.86	15.88	15.29	12.50	8.67	3.94	.76	.69	.52	.15		74.81
9	.00	.07	.54	.64	1.15	1.60	2.17	.85	.67	.23	.21	.02		8.15
10	.00	.02	.11	.21	.54	.47	.41	.30	.18	.08	.04	.00		2.16
11	.00	3.02	11.85	15.87	14.79	11.35	7.01	3.60	.89	.88	.68	.14		68.06
12	.00	2.45	10.56	13.71	14.07	11.86	7.99	3.67	.77	.62	.40	.10		66.20
13	.00	.14	.95	.96	3.70	4.60	5.05	3.19	2.49	1.77	.96	.18		23.99
14	.00	.58	1.64	.90	.48	.40	.20	.35	.25	.15	.10	.00		5.05
15	.00	6.86	16.39	19.12	18.19	14.75	10.01	4.67	.87	.65	.46	.14		92.11
16	.00	6.08	15.48	15.76	15.36	12.61	8.82	4.38	.81	.56	.37	.08		78.31
17	.00	5.37	15.31	15.60	15.24	12.95	9.36	4.70	.87	.60	.49	.14		78.63
18	.00	3.94	12.76	16.36	16.17	13.51	9.38	4.74	1.14	.79	.48	.05		79.82
19	.00	.34	.60	1.35	1.08	1.20	1.85	1.05	.60	.35	.09	.04		8.55
20	.00	6.81	16.49	15.99	9.74	12.05	6.20	4.55	3.24	1.94	1.19	.17		78.37
21	.00	1.63	16.18	18.08	17.18	14.24	10.11	5.21	4.56	3.83	1.50	.29		92.81
22	.00	.13	2.10	6.78	16.06	13.49	9.44	5.54	2.80	.98	.58	.17		58.05
23	.00	.61	6.46	6.38	13.49	11.05	7.33	4.64	3.45	2.61	1.33	.14		57.49
24	.00	.02	.50	1.17	.92	.12	.18	.20	.15	.10	.10	.05		3.51
25	.02	8.16	17.05	19.48	18.92	15.64	10.91	5.36	.92	.59	.45	.18		97.68
26	.12	8.77	14.30	16.81	16.21	13.19	9.70	5.51	1.51	.63	.57	.30		87.62
27	.05	2.77	10.08	14.70	14.21	11.68	6.18	5.71	2.20	.55	.20	.10		68.43
28	.00	.26	1.45	1.58	1.14	3.36	3.65	4.56	3.27	.94	.49	.12		20.60
Total	.19	78.46	256.95	291.52	298.58	253.29	176.32	96.95	59.70	25.03	14.72	3.09		1514.58
Average per day	.01	2.80	8.46	10.40	10.66	9.05	6.30	3.46	1.42	.89	.53	.11		54.09

TABLE II-f - FEB.

Radiation on Surface 45° South through Vycor Glass
Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	1.95	19.50	25.15	45.55	68.70	68.05	59.00	46.60	26.25	5.20	.68		364.63
2	.00	2.20	20.00	25.60	46.00	69.05	68.45	59.45	46.85	26.55	5.50	.72		368.37
3	.00	1.32	16.83	23.22	50.10	70.96	70.70	60.62	40.62	20.24	5.23	.40		358.24
4	.00	1.77	12.28	24.37	44.89	43.89	50.40	21.64	23.02	11.58	5.51	.54		257.89
5	.00	.42	1.65	2.75	4.50	5.80	6.00	4.05	2.70	1.45	1.20	.04		30.56
6	.00	.60	2.51	4.89	9.98	12.74	12.06	7.90	6.89	6.04	3.80	.51		67.92
7	.00	2.30	24.58	32.17	54.57	81.43	80.30	70.95	53.26	28.21	3.48	.71		451.96
8	.00	2.49	25.18	32.81	48.61	76.29	75.37	65.04	52.51	28.35	3.78	.77		409.00
9	.00	.36	1.87	2.79	4.87	6.61	8.60	4.16	3.73	1.49	.96	.20		35.64
10	.00	.00	.52	1.20	1.45	1.55	1.85	1.80	1.15	.55	.42	.00		10.49
11	.00	2.85	22.35	28.05	47.49	71.11	68.28	55.29	45.96	28.44	3.97	.87		374.66
12	.00	2.36	18.20	24.24	45.36	67.94	68.96	64.23	48.18	25.21	3.59	.80		369.07
13	.00	.42	3.21	3.76	12.83	20.09	25.39	20.22	11.10	8.62	3.60	.75		109.99
14	.00	1.38	3.57	3.59	2.49	1.32	1.12	4.45	6.10	4.45	5.50	.55		34.50
15	.01	2.44	31.67	34.86	55.45	84.79	81.88	73.21	56.80	30.74	3.64	1.01		456.50
16	.01	2.44	28.03	31.64	49.15	76.65	78.01	69.98	52.45	29.39	3.56	.87		422.12
17	.00	2.08	29.48	33.44	47.88	76.60	76.32	70.36	53.04	28.68	3.99	1.08		422.95
18	.00	2.51	21.75	32.10	51.14	78.35	74.97	62.00	45.49	25.37	3.59	.64		397.89
19	.00	1.18	1.61	4.41	3.69	3.10	5.70	4.50	2.80	1.26	.36	.00		28.61
20	.03	3.34	30.89	35.39	19.35	69.52	35.07	19.25	18.60	27.38	5.25	1.15		265.90
21	.01	2.30	35.32	35.27	50.62	81.88	79.38	47.27	26.14	27.58	5.45	1.20		392.40
22	.00	.66	5.65	14.67	39.68	64.51	69.67	42.03	36.59	27.26	5.10	1.42		307.24
23	.01	1.45	15.04	14.68	38.81	49.56	45.55	22.98	15.21	10.99	5.51	1.11		218.70
24	.00	.21	1.45	3.29	2.92	.56	1.02	1.08	1.44	1.55	1.59	.22		15.33
25	.03	5.24	36.24	37.33	47.93	81.22	83.21	74.61	58.33	32.52	3.50	1.30		461.46
26	.07	7.68	33.72	35.72	48.26	74.32	57.72	47.00	35.00	26.62	4.20	1.65		371.96
27	.08	4.08	25.08	29.91	46.91	65.02	35.77	47.27	10.35	6.00	3.15	.75		274.37
28	.00	.88	4.15	4.52	4.84	11.70	15.52	21.46	14.67	5.46	1.94	.25		81.39
Total	.25	56.91	470.33	579.62	925.30	1415.22	1345.32	1100.50	815.36	496.23	94.55	20.15		7317.74
Average per day	.01	2.03	16.80	20.71	33.05	50.54	47.98	39.30	29.12	17.72	3.37	.72		261.35

TABLE II-g - FEB.

Radiation on Surface 45° South through Yellow Glass

Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	1.85	15.25	18.70	25.85	45.80	47.15	40.85	52.70	19.15	2.25	.55		249.90
2	.00	2.00	15.70	19.00	26.10	46.05	47.50	41.00	53.05	19.35	2.35	.40		252.50
3	.00	1.18	15.90	17.45	29.62	47.90	48.79	42.31	29.43	16.09	2.32	.28		251.25
4	.00	1.45	11.65	18.30	26.16	36.79	25.22	15.01	16.41	8.31	2.24	.34		161.88
5	.00	.28	1.15	1.85	3.00	3.85	4.00	2.75	1.80	.95	.80	.05		20.46
6	.00	.40	1.68	3.17	6.54	8.54	7.76	4.40	4.50	4.01	2.60	.33		43.93
7	.00	2.36	24.21	22.88	30.33	34.31	34.33	49.44	37.46	21.31	2.47	.45		299.73
8	.00	1.81	18.98	25.73	25.85	30.76	31.86	44.88	37.08	21.49	2.78	.30		279.68
9	.00	.21	1.26	1.78	3.14	4.30	5.61	2.65	2.25	.92	.65	.07		22.84
10	.00	.00	.35	.80	.98	1.05	1.30	1.20	.80	.40	.29	.00		7.17
11	.00	2.37	18.39	20.74	26.19	47.48	47.40	38.85	32.45	19.85	2.85	.39		257.54
12	.00	1.75	13.36	17.82	27.10	45.30	48.49	45.56	35.97	19.31	2.31	.32		255.89
13	.00	.31	2.13	2.67	8.08	15.75	17.32	15.74	7.36	5.81	2.29	.46		78.92
14	.00	.77	2.98	2.27	1.67	.38	3.74	5.00	4.29	2.95	3.75	.38		25.59
15	.00	3.86	26.17	25.14	30.34	37.04	37.32	30.38	20.39	23.84	2.69	.67		318.44
16	.01	3.44	22.71	22.35	26.77	31.39	28.35	27.40	36.48	21.94	2.33	.38		284.15
17	.00	3.18	22.61	23.29	25.41	32.09	33.62	28.31	37.44	21.76	2.96	.78		291.62
18	.00	1.79	16.66	19.76	25.68	32.28	32.27	25.34	32.47	19.25	2.60	.34		266.44
19	.00	.73	.99	2.85	2.35	2.05	3.80	3.00	1.89	.85	.24	.00		18.73
20	.01	3.97	22.72	22.96	12.07	27.40	19.89	16.44	13.71	16.98	3.76	.66		180.57
21	.01	1.98	25.61	24.84	27.76	35.38	34.16	32.21	17.95	13.65	4.22	.75		258.52
22	.00	.41	3.77	9.93	24.40	25.71	27.74	29.37	25.77	21.09	3.45	.90		210.54
23	.00	.97	9.18	9.92	25.46	35.84	31.51	16.03	10.47	7.71	3.68	.74		149.31
24	.00	.15	.99	2.22	1.98	.36	.68	.72	.96	1.04	1.06	.15		10.31
25	.03	3.96	24.88	28.30	26.92	36.06	36.97	27.24	20.88	35.86	2.53	.81		326.44
26	.03	7.02	13.57	25.27	27.29	28.08	29.36	32.00	26.00	18.18	2.97	1.08		240.85
27	.03	3.33	17.39	20.94	26.78	24.93	25.97	32.69	6.81	4.00	2.10	.50		185.47
28	.00	.33	2.68	2.92	3.11	7.68	8.90	14.34	9.89	2.45	1.28	.18		53.96
Total	.12	54.28	333.32	412.01	527.13	968.85	906.41	757.49	574.33	368.48	66.17	12.82		4991.63
Average per day	0	1.94	12.62	14.71	18.83	34.24	32.37	27.05	20.52	13.16	2.36	.46		178.27

TABLE II-h - FEB.

Radiation on Surface 45° South through Black Glass
Calories per cm^2

1946 Hour	6-7	7-	8-	9-	10-	11-	12-	13-	14-	15-	16-	17-	18-	Total
Feb.														
1	.00	.60	5.20	6.30	10.25	15.20	15.10	15.25	11.10	6.35	.60	.12		84.07
2	.00	.68	5.25	6.45	10.50	15.25	15.35	15.50	11.15	6.45	.65	.12		85.35
3	.00	.42	5.84	6.49	11.82	14.45	15.89	14.27	10.64	5.95	.60	.06		86.59
4	.00	.59	4.46	7.07	10.82	12.77	11.39	4.71	5.45	2.75	.75	.11		60.85
5	.00	.04	.19	.30	.48	.67	.72	.50	.29	.17	.16	.00		3.52
6	.00	.10	.39	.71	1.65	2.07	1.81	1.96	.88	.92	.66	.08		10.33
7	.00	1.06	7.75	8.58	12.11	17.45	17.53	15.97	12.51	7.44	.67	.11		100.98
8	.00	1.15	7.19	8.85	11.01	16.58	16.84	14.75	12.15	7.43	.73	.14		96.78
9	.00	.03	.22	.28	.53	.75	1.10	.58	.51	.09	.09	.01		3.79
10	.00	.00	.09	.19	.22	.25	.36	.34	.18	.10	.06	.00		1.79
11	.00	1.01	6.84	7.42	10.96	15.82	15.66	13.21	11.25	6.95	.80	.14		90.06
12	.00	.57	4.54	6.23	10.67	15.34	16.02	14.20	11.34	6.51	.61	.12		86.15
13	.00	.04	.60	.65	1.62	3.25	4.08	3.30	1.55	1.25	.55	.11		17.00
14	.00	.26	.88	.41	.21	.11	.09	.35	.55	.35	.48	.08		3.57
15	.00	1.33	9.69	9.19	13.40	19.40	18.99	17.00	13.64	7.94	.77	.17		111.52
16	.00	1.30	7.85	7.72	10.64	16.12	16.08	14.99	12.01	7.21	.66	.12		94.57
17	.00	1.05	7.87	7.88	10.26	16.08	16.61	15.28	12.20	7.13	.73	.12		95.21
18	.00	.98	7.49	8.02	11.34	16.97	16.59	14.50	11.41	6.76	.65	.05		94.76
19	.00	.18	.17	.50	.31	.26	.50	.43	.30	.17	.06	.00		2.88
20	.00	1.70	8.16	16.91	4.37	15.26	5.59	4.78	3.11	3.73	1.12	.15		66.88
21	.00	.63	9.67	8.96	11.65	17.91	17.04	10.08	5.51	4.20	1.21	.18		87.05
22	.00	.06	1.07	3.23	9.59	13.22	14.89	8.38	8.30	6.85	.78	.19		66.56
23	.00	.30	3.48	3.10	9.61	10.94	10.05	4.98	3.13	2.31	1.07	.21		49.18
24	.00	.02	.25	.58	.44	.05	.08	.12	.16	.18	.20	.05		2.11
25	.01	2.05	8.65	9.35	9.00	18.70	19.00	16.00	13.60	12.95	.81	.20		110.32
26	.01	2.45	10.28	7.97	10.24	14.85	11.65	7.95	7.00	6.15	.74	.24		79.53
,27	.01	1.09	5.45	6.21	9.25	12.92	6.40	9.11	1.60	.80	.42	.10		53.36
28	.00	.11	.69	.59	.58	1.76	2.07	3.94	2.63	.43	.22	.05		13.07
Total	.03	19.67	129.99	150.13	203.53	304.38	287.48	237.33	183.73	121.50	16.83	3.01		1657.61
Average per day	.00	.70	4.64	5.36	7.27	10.87	10.27	8.48	6.56	4.34	.60	.11		59.20

CAMP LEE, VA.

TABLE NO. III – JAN. AND FEB.

DATE	CLICKS PER DAY	CAL. PER CM^2	DATE	CLICKS PER DAY	CAL. PER CM^2
Jan. 1	614	.073	Feb. 1	1601	.191
2	698	.083	2	1357	.162
3	504	.060	3	1125	.134
4	676	.081	4	1946	.233
5	891	.106	5	354	.042
6	499	.060	6	862	.103
7	393	.047	7	1678	.201
8	244	.029	8	1693	.202
9	457	.055	9	593	.071
10	1337	.160	10	281	.034
11	401	.048	11	1832	.219
12	1091	.130	12	2017	.241
13	1104	.132	13	1364	.163
14	1156	.138	14	562	.067
15	345	.041	15	1991	.238
16	913	.109	16	2366	.283
17	1133	.135	17	2362	.282
18	1177	.141	18	2021	.242
19	1173	.140	19	556	.066
20	151	.018	20	1520	.182
21	647	.077	21	2001	.239
22	220	.026	22	1673	.200
23	862	.103	23	1304	.156
24	361	.043	24	117	.014
25	1151	.138	25	2174	.260
26	1235	.148	26	2600	.311
27	961	.115	27	2179	.260
28	1349	.161	28	1165	.139
29	1411	.169			
30	306	.037			
31	217	.026			
Total		2.829	Total		4.935
Average per Day		.091	Average per Day		.176

Camp Lee, Va.
Jun. 26, 1946
Total horizontal radiation (cal/cm²)

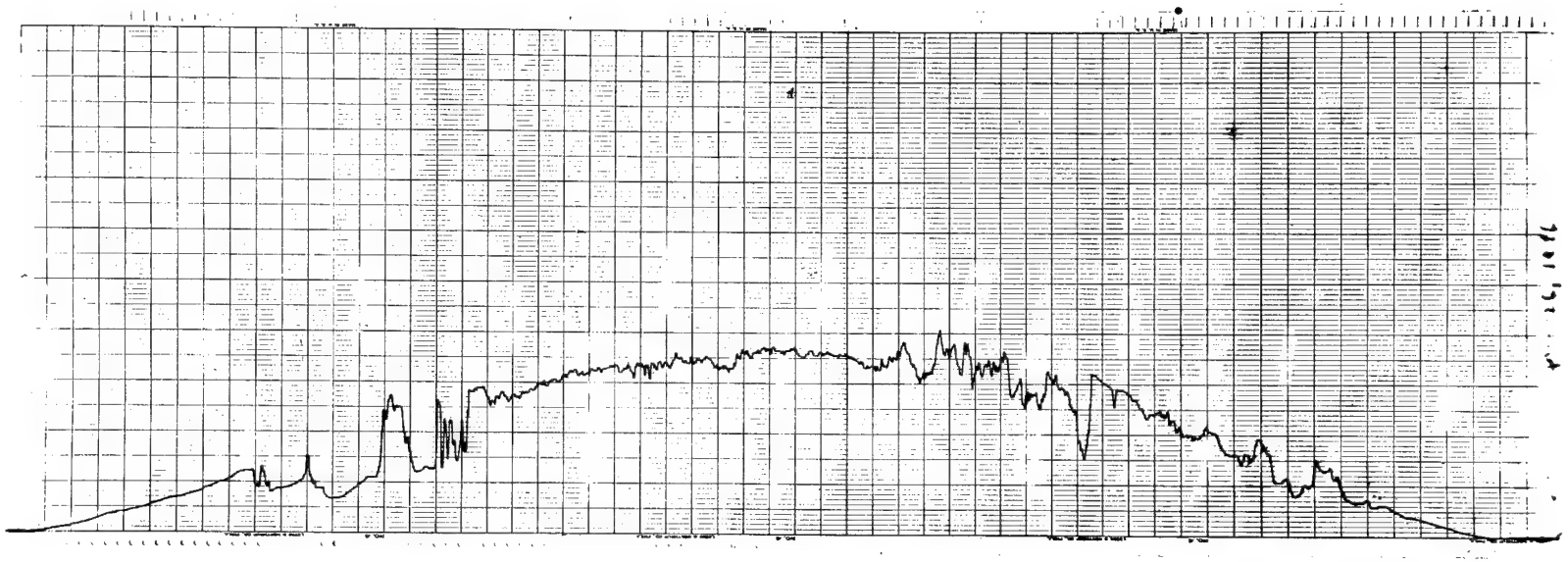


Figure 1. Typical record on a fairly clear day (Jan. 26, 1946). Taken with the Eppley Pyrheliometer, measuring total radiation received on a horizontal surface at Camp Lee, Virginia.

Camp Lee, Va
Jan 26, 1946
Quartz Hemisphere
45° to East

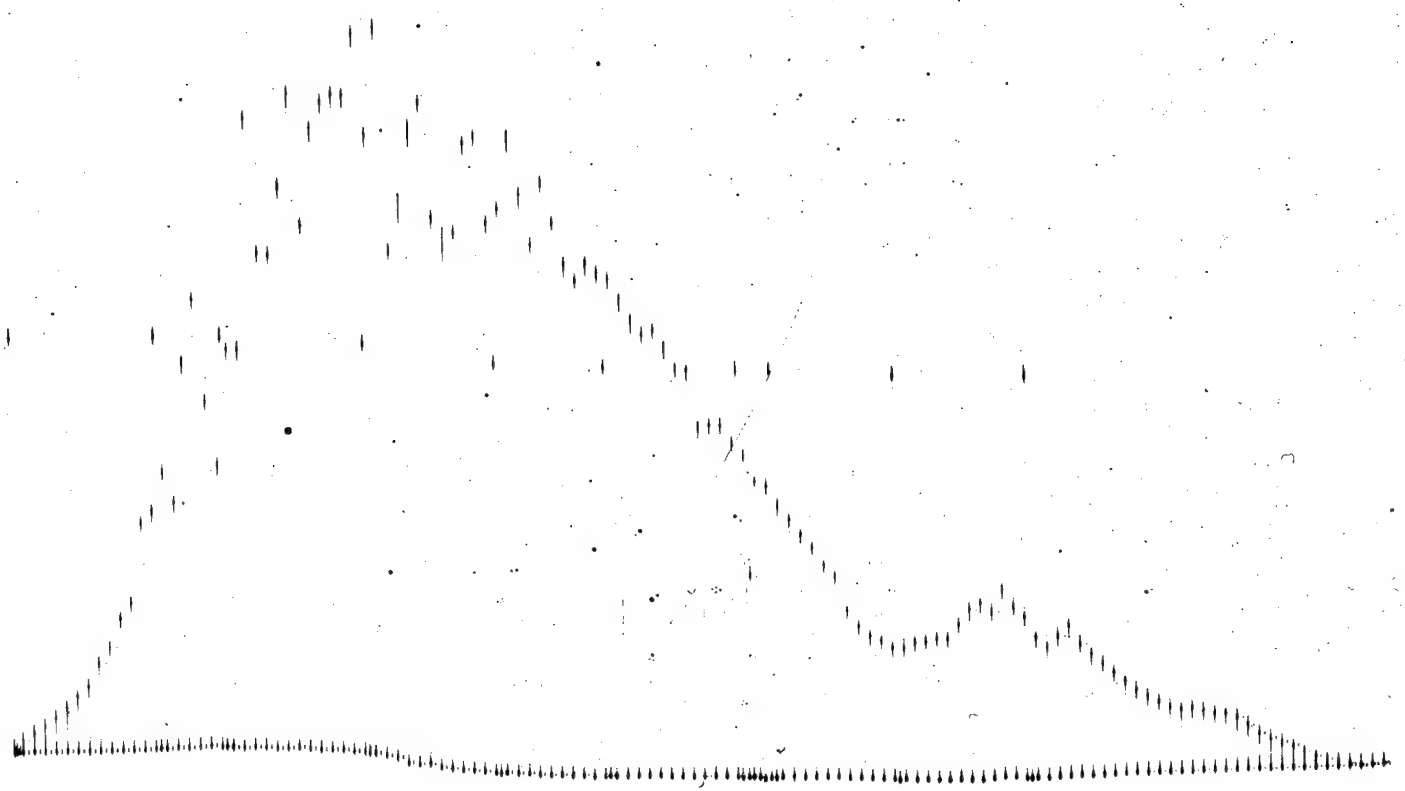


Figure 2. Total radiation received at an angle of 45° to the east, Camp Lee, Virginia. January 26, 1946.

Camp Lee, Va.
Jan. 26, 1946
Yellow hemisphere (#3385)
45° to East

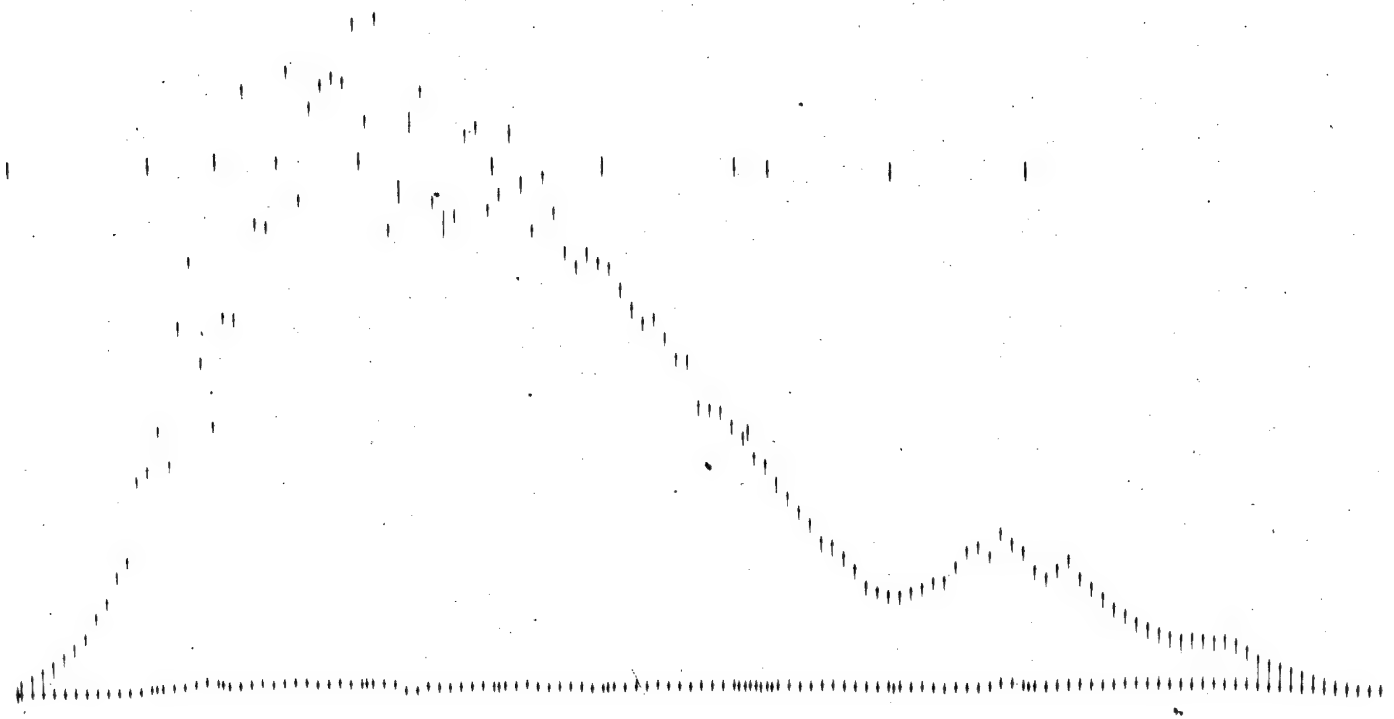


Figure 3. Radiation received through yellow filter, 45° to east, Camp Lee, Virginia. January 26, 1946.

Carnegie, Va
Jan. 26, 1940
Black hemisphere (# 2540)
45° to East

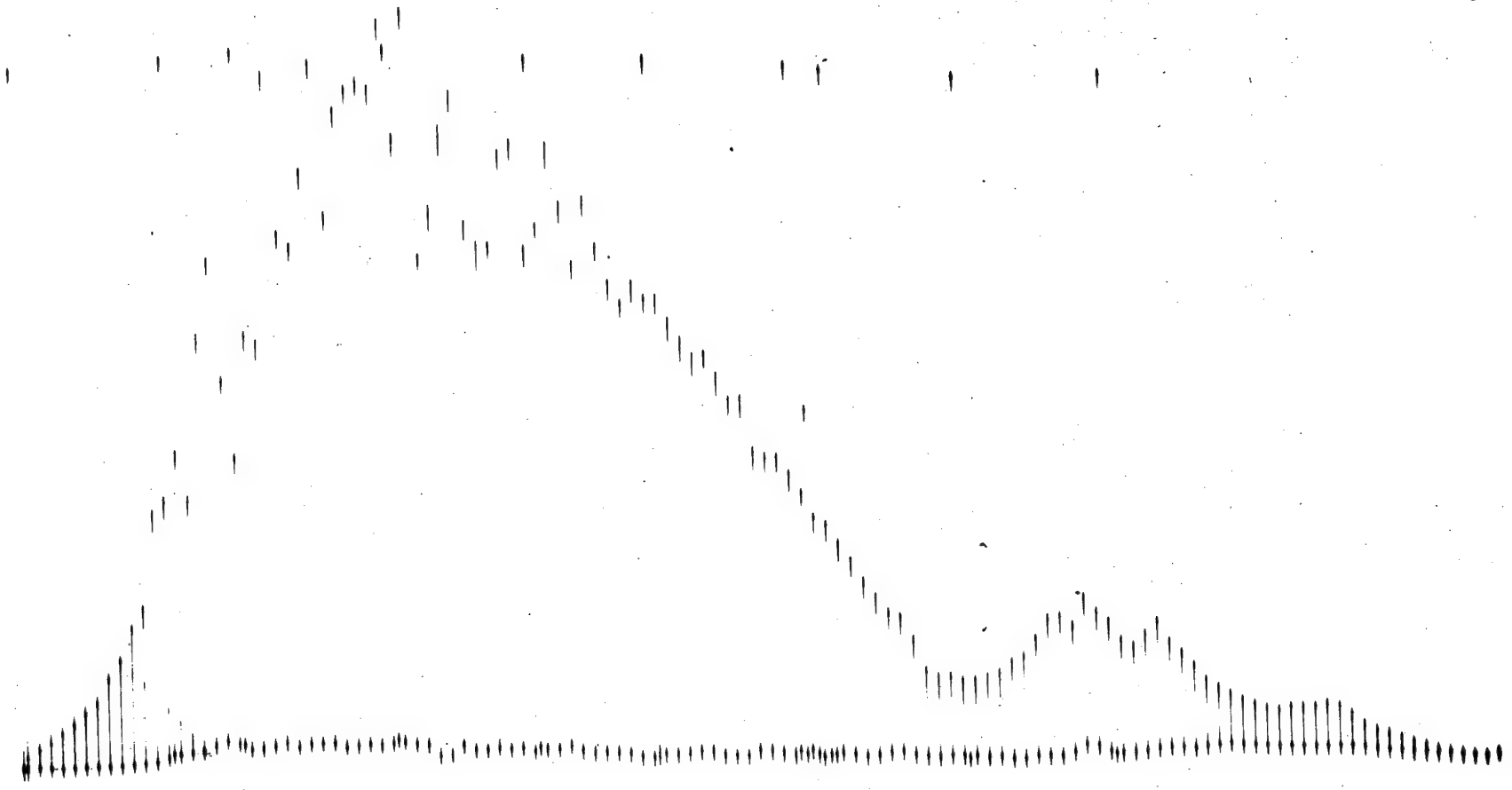


Figure 4. Radiation received through black filter, 45° to east, Camp Lee, Virginia. Jan 26, 1946.

Camp Lee, Va.
Jan. 26, 1946
Vycor filter
45° to South

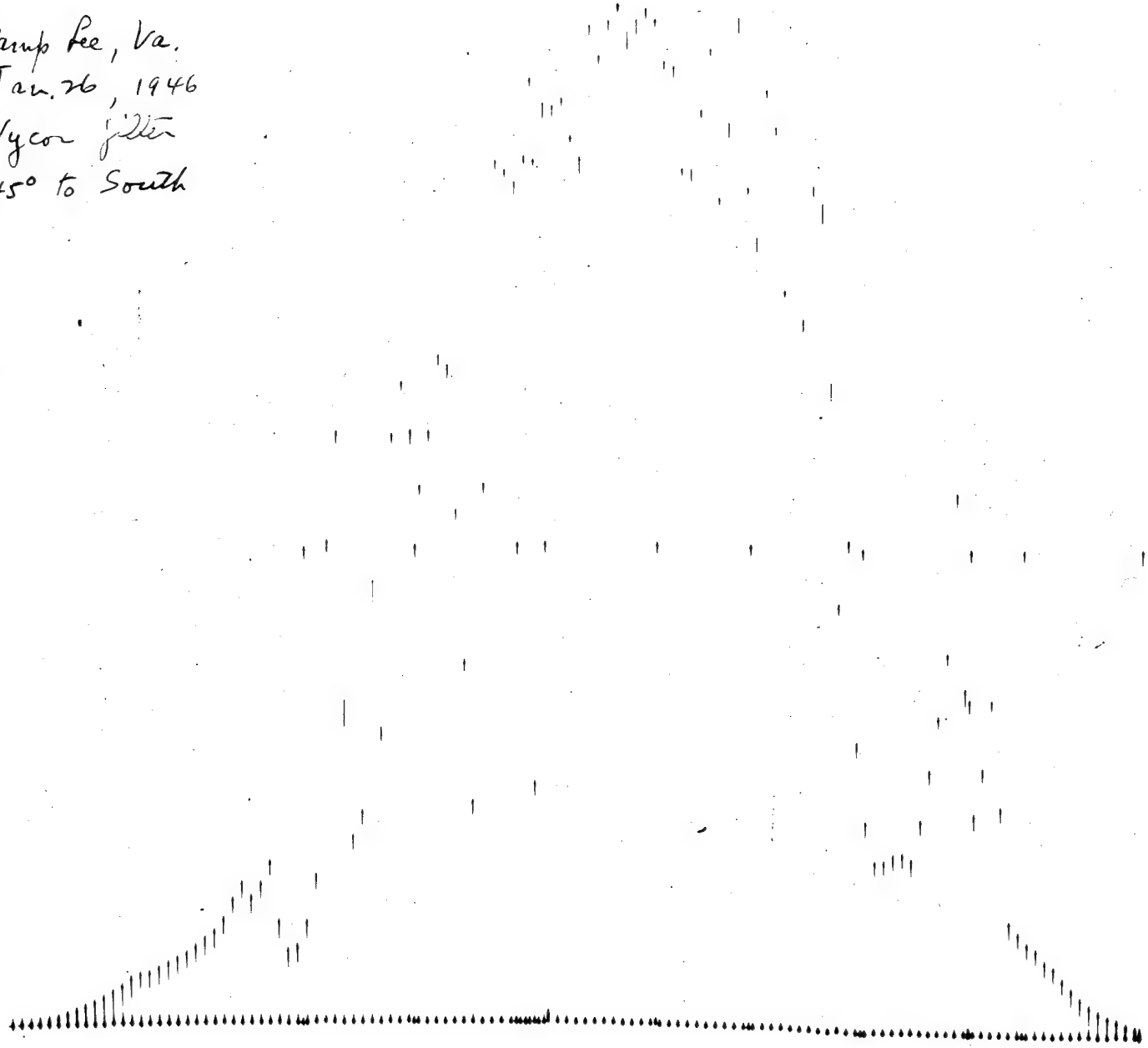


Figure 5. Radiation received through vycor, 45° to south, Camp Lee, Virginia. January 26, 1946.

Camp Lee, Va.
Jan. 26, 1946
Yellow fillet (3385)
45° to South

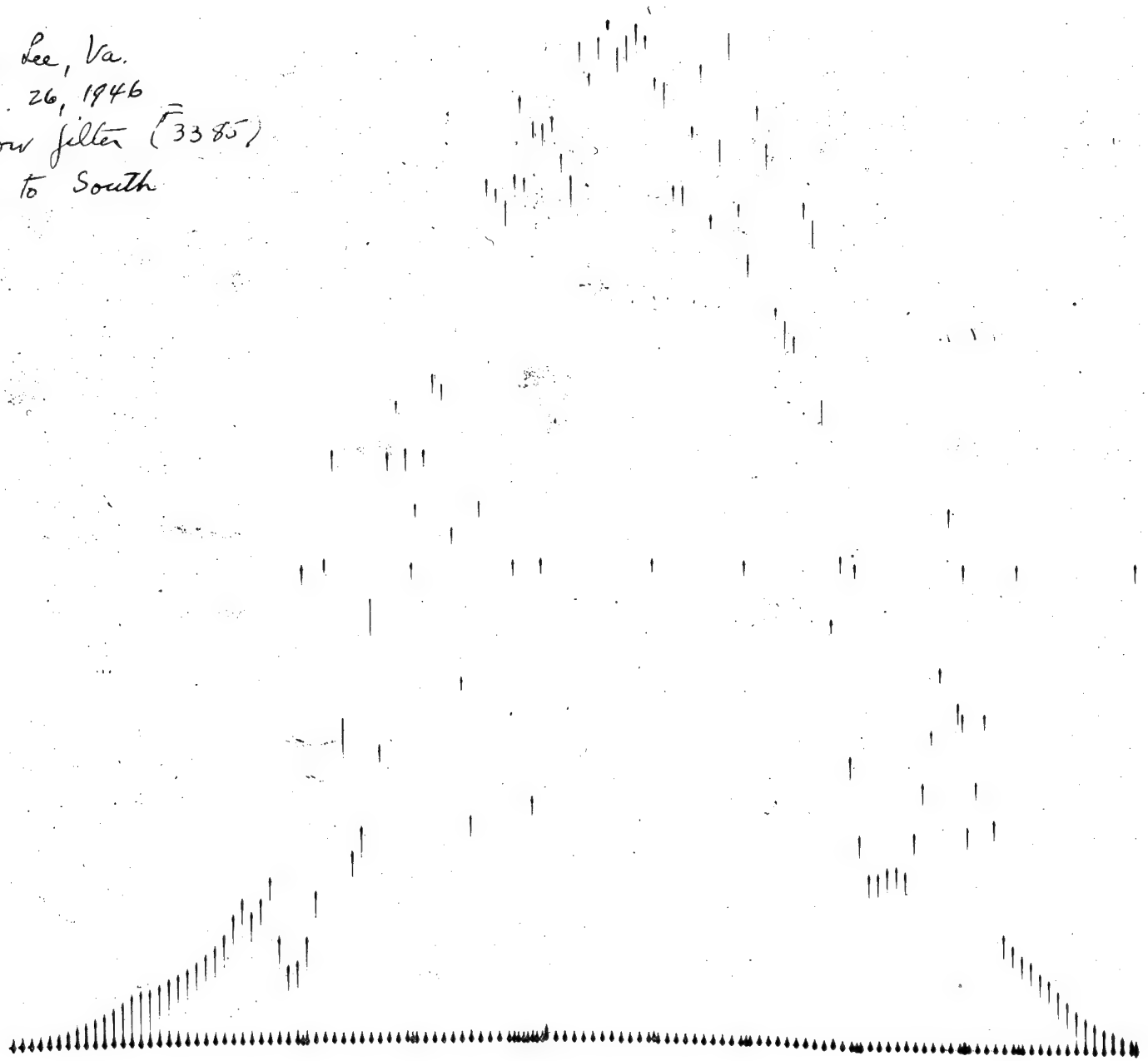


Figure 6. Radiation received through yellow filter, 45° to south, Camp Lee, Virginia. January 26, 1946.

Camp Lee, Va.
Jan 26, 1946
Black Silken (#2540)
45° to South "

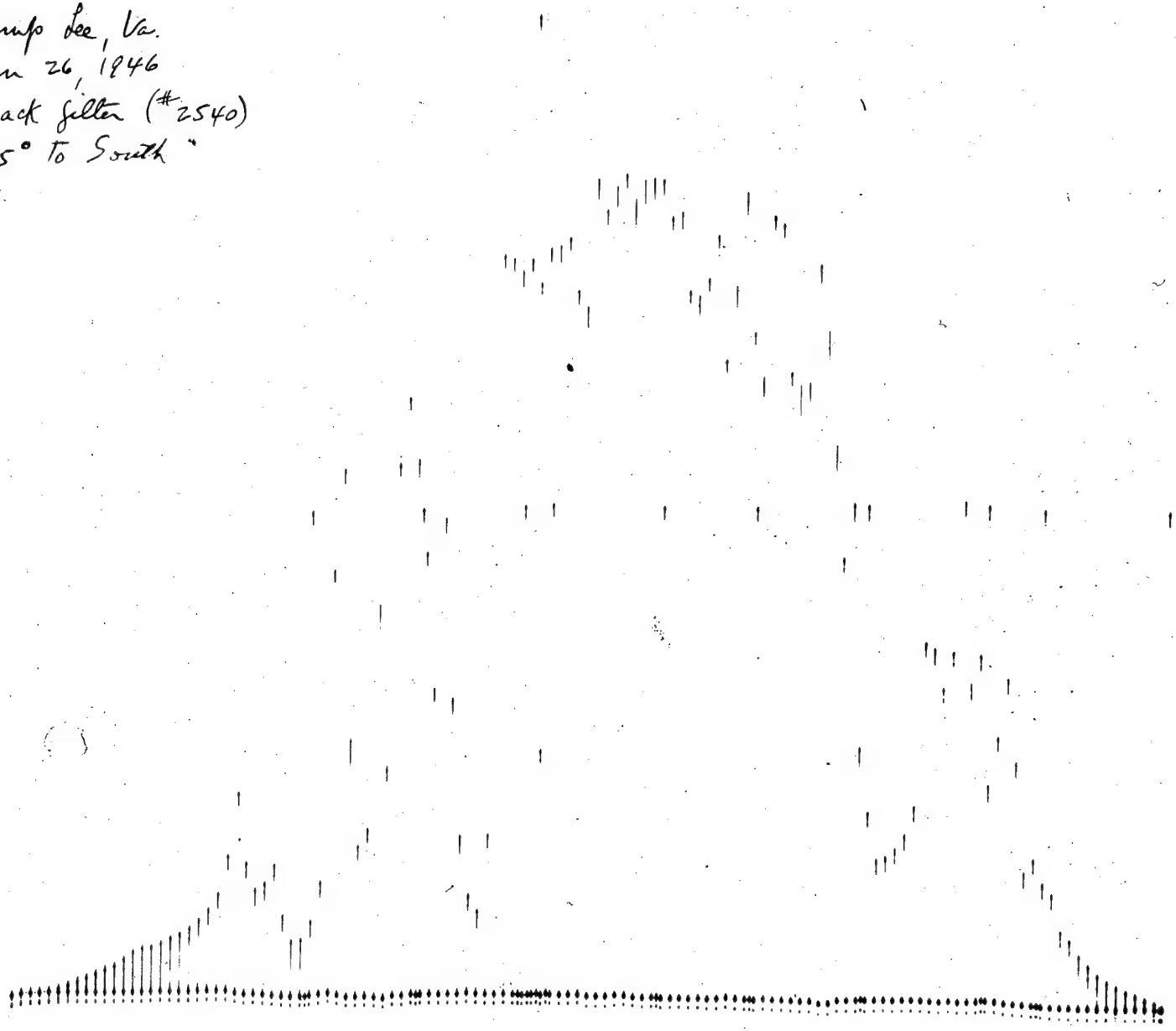


Figure 7. Radiation received through black filter, 45° to south, Camp Lee, Virginia. Jan. 26, 1946.

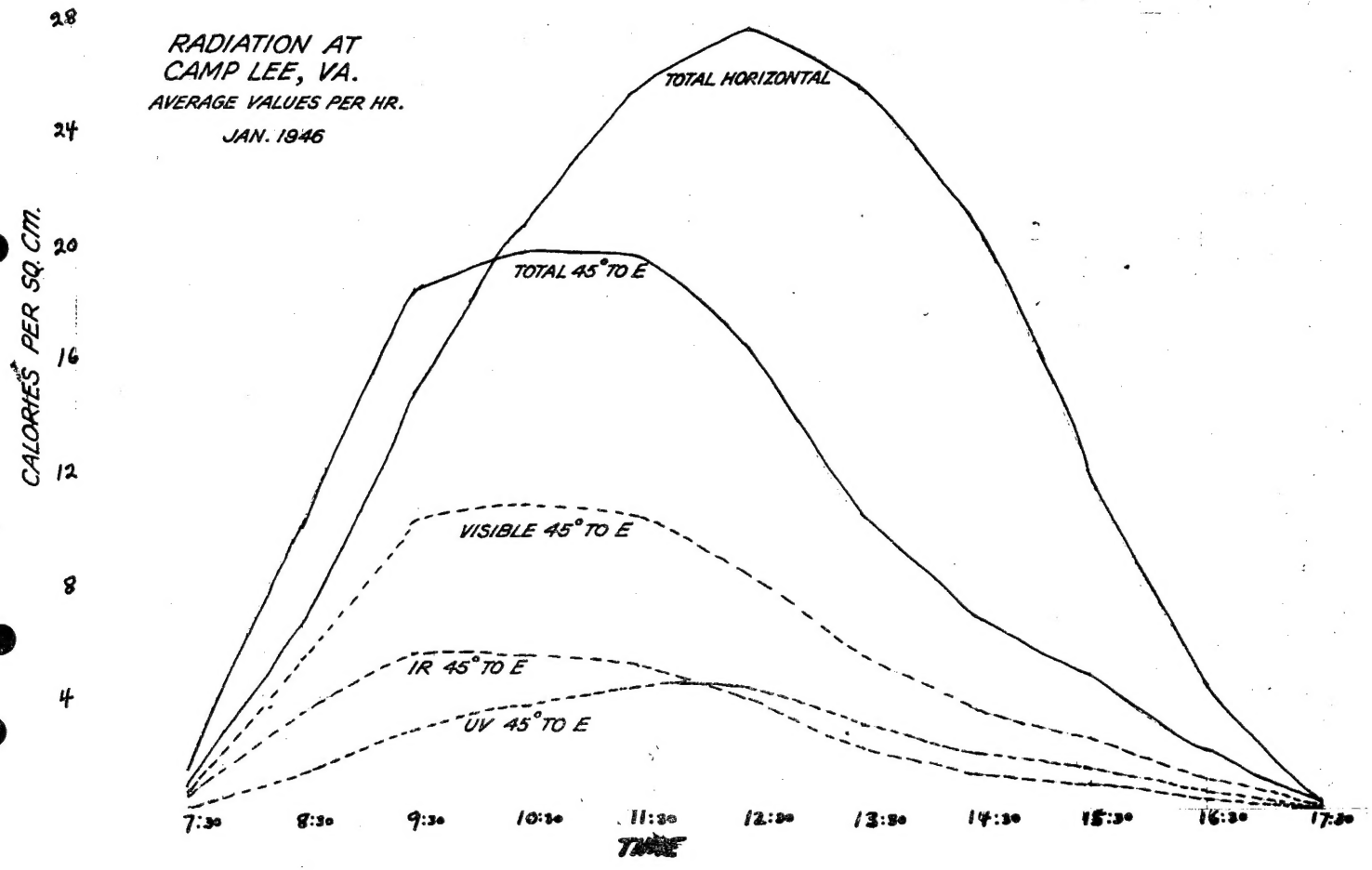

RADIATION AT
CAMP LEE, VA.
AVERAGE VALUES PER HR.
JAN. 1946
TOTAL HORIZONTAL
TOTAL 45° TO E
VISIBLE 45° TO E
IR 45° TO E
UV 45° TO E
CALORIES PER SQ. CM.
28
24
20
16
12
8
4
7:30
8:30
9:30
10:30
11:30
12:30
13:30
14:30
15:30
16:30
17:30
TIME

Figure 8. Average values for each hour, in calories per sq. cm., of the total radiation and of three bands in the spectrum as received at Camp Lee, Virginia during January 1926.

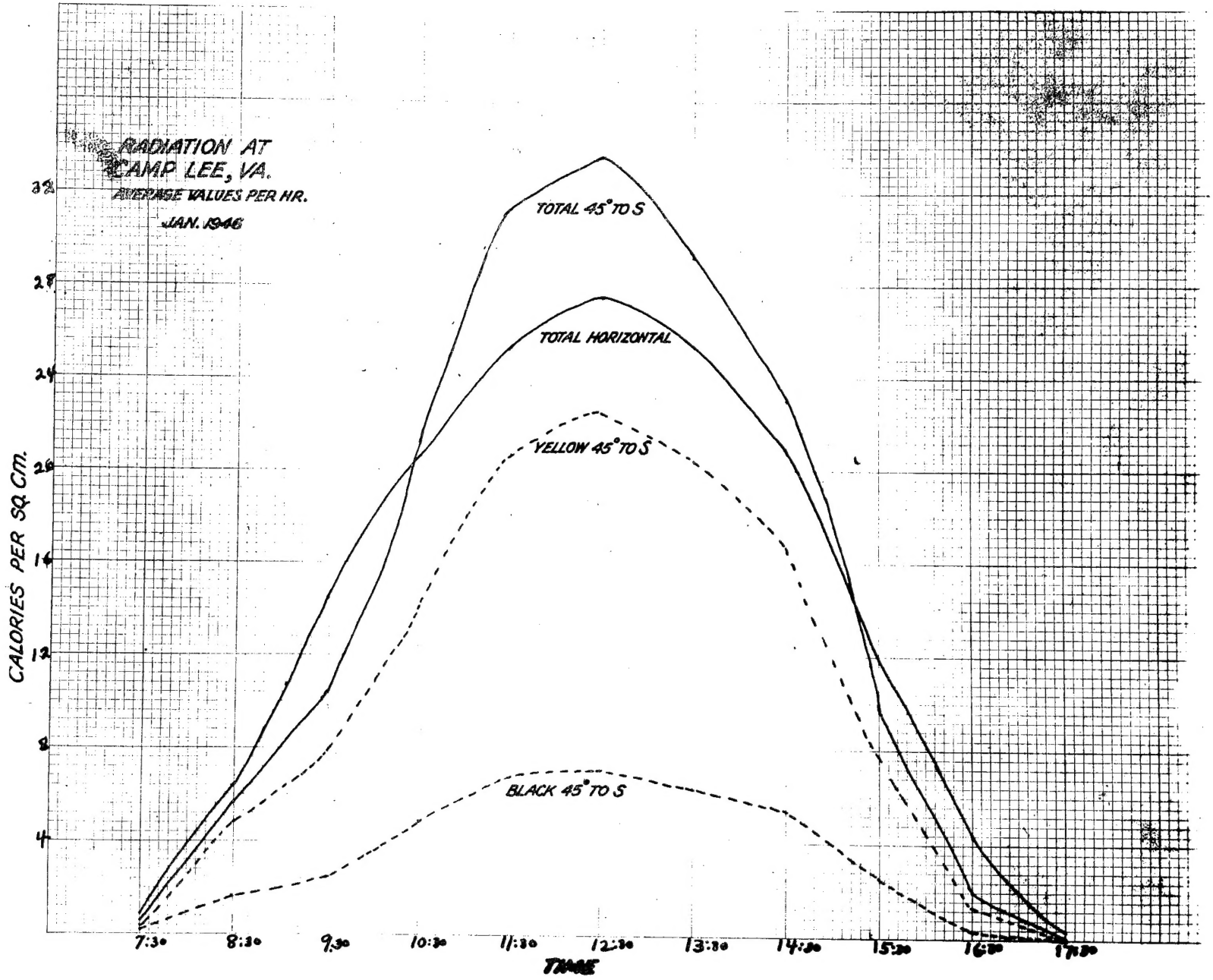

RADIATION AT
CAMP LEE, VA.
AVERAGE VALUES PER HR.
JAN. 1946
TOTAL 45° TO S
TOTAL HORIZONTAL
YELLOW 45° TO S
BLACK 45° TO S
CALORIES PER SQ CM.
32
28
24
20
16
12
8
4
7:30
8:30
9:30
10:30
11:30
12:30
13:30
14:30
15:30
16:30
17:30
TIME

Figure 9. Average values of each hour, in calories per sq. cm., of the total radiation 45° to south, and of the radiation through 3 different filters, as received at Camp Lee, Virginia., during January 1946.